NORTH AMERICAN
EDI SOFTWARE PROVIDER PROFILES

INPUT

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INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Continuous-information advisory services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services (software, processing services, turnkey systems, systems integration, professional services, communications, systems/software maintenance and support).

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Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

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Electronic Data Interchange Program (EDIP)

North American EDI Software Provider Profiles

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Abstract

Electronic data interchange (EDI) is the electronic transfer of standard business transaction information between organizations in a structured application. The trading partners may have different processors and data formats, in which case translation between common formats or standards is required.

This report profiles 35 providers of EDI translation software. Market share estimates also are provided.

The study is one of a series examining EDI markets and implementations. The report contains 114 pages and 4 exhibits, and an appendix.

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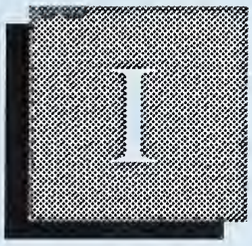
Exhibits



Introduction

I

Introduction

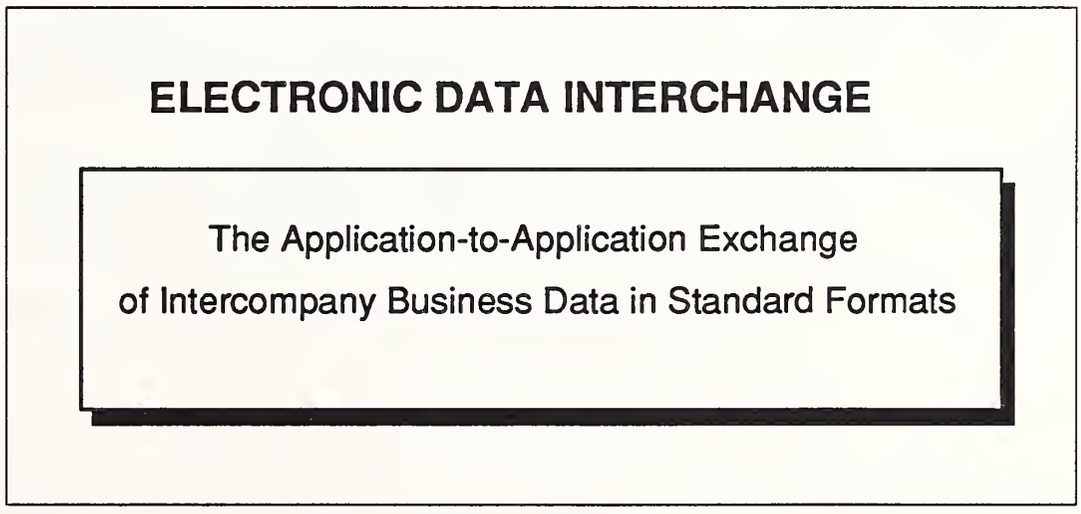
A

Background

This report, produced by INPUT's Electronic Data Interchange Program (EDIP), profiles 35 companies providing electronic data interchange (EDI) translation software.

INPUT defines EDI as the intercompany electronic transfer of business information between applications in a structured format conforming to a public or de facto standard (see Exhibit I-1). The information represents standard business documents such as invoices, purchase orders, and logistical information.

EXHIBIT I-1



EDI techniques are also used for other applications, such as health insurance claims, and for agency-to-company communications in the property and casualty insurance industry. However, software supporting these other EDI approaches is not included in this volume.

EDI commonly involves the transmission of data in one of several standard formats, with the American National Standard Institute's (ANSI) X12 being the emerging dominant standard. With few exceptions, all companies described in this study translate to and from the ANSI X12 standard.

- It may be necessary for data to be translated to a standard either prior to transmission or by a third-party service acting as an intermediary in the transaction.

- It may also be necessary for the data to be translated again into formats recognized by a trading partner's computer.

This translation function is the core role of EDI software, although administration and communications functions also are important.

EDI is providing new lines of business for software vendors, professional services companies, VANs, and RCS firms. The principal participants are aggressively pursuing EDI accounts and promoting EDI within many industry segments, making for a very competitive market environment.

- In the software area there are more than 35 providers. In network/ processing services, there are approximately 40 companies providing EDI services in North America.

- Although opportunities remain to be exploited, profitability has been elusive for many as competition increases.

However, users ultimately benefit from industry competition through a variety of choices, competitive pricing, and improved features.

B

Scope

The study consists primarily of corporate and product descriptions of EDI software providers, outlined in Chapter II.

Chapter III is a concluding chapter that offers some observations on the EDI market.

Definitions of EDI-related terms are found in Appendix A.

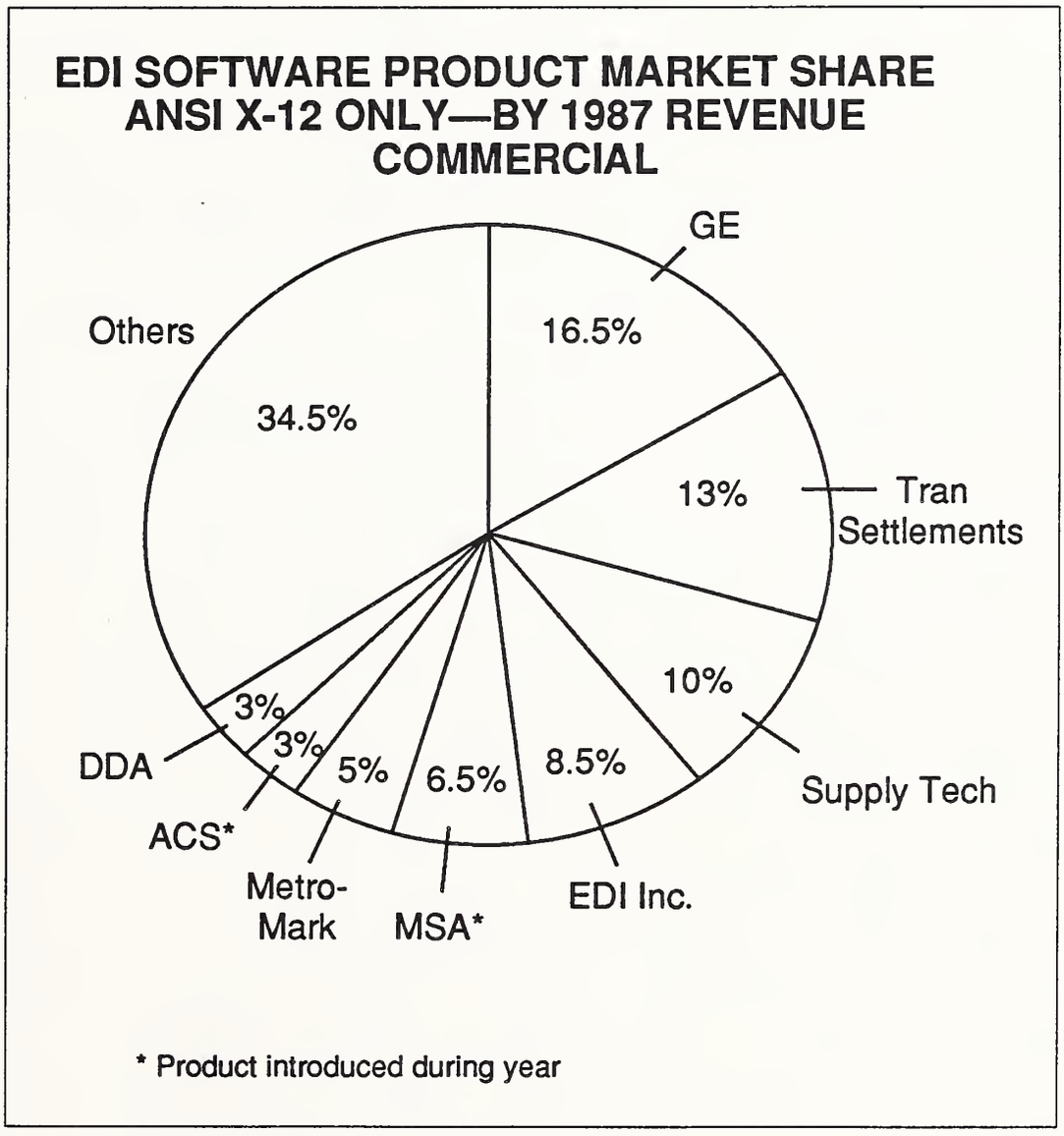
A companion study, *EDI Software Products: Trends, Markets and Issues,* provides an EDI software tutorial, describes its functions, compares varieties of EDI, reports user concerns, examines EDI software market directions, identifies opportunities, offers recommendations, and sizes the market.

C

EDI Software Providers—Market Share Data

Exhibit I-2 shows relative 1987 market shares of vendors providing mainline EDI software. To be included in this analysis, the software packages must at least translate data from corporate formats to and from the ANSI X12 standard.

EXHIBIT I-2



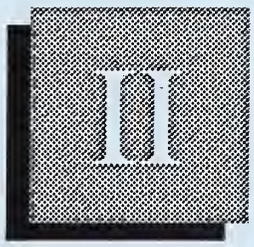
D

Related INPUT Reports

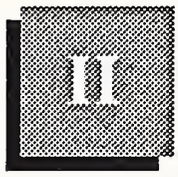
This study is one of a continuing series focused on EDI. Other reports published or planned for the series include:

- *EDI Software Products: Issues, Trends and Markets*
- *EDI Implementation Case Studies*
- *North American EDI Service Market Analysis 1988-1993*

- *North American EDI Service Provider Profiles*
- *Vertical Industry EDI Directions and Potentials*
- *EDI and Professional Services*
- *Network Services in Western Europe*
- *X.400 and EDI*
- *International EDI Services*
- *Federal Government EDI Initiatives*



EDI Software Provider Profiles



EDI Software Provider Profiles

This chapter profiles, in alphabetical order, EDI software provider companies and their products. It uses a standardized format covering corporate development, product specifications, industry and geographic markets, and company strategies.

COMPANY PROFILE

A
AMERICAN BUSINESS
COMPUTERS
30500 Northwestern Highway
Suite 100
Farmington Hills, MI 48018
(313) 855-4520

Kimba Vasquez, President
Private Corporation
Total Employees: 15
Total Revenue, Fiscal Year End
1/31/88: $1,500,000

The Company

Founded in 1976, American Business Computers (ABC) provides electronic data interchange (EDI) software products, turnkey systems, professional services, and a variety of other EDI-related services. The company's first project was to write a communications and translation program for one of K-Mart's largest vendors. That project led to the development of standard communications and translation programs for suppliers to the Big Three. ABC has an installed base of more than 700 customers.

For the fiscal year ending January 31, 1988, revenue for the company was $1.5 million.

Currently, American Business Computers has 15 employees.

In late 1988, American Business Computer was acquired by T and B Computing, Inc. (Ann Arbor, MI), one of a family of companies owned by Thomas S. Monaghan, Inc. This holding firm manages Domino's Pizza and the Detroit Tigers baseball team, among other interests. T and B Computing specializes in software for the magazine and book industry and project management software.

The company's principal competitors include the following: Supply Tech, American Custom Software, and Birmingham Computer Group for the Automotive Data Communications product and the Electronic Data Exchange PC (EDE-PC) product; Metromark and EDI Inc. for the EDE-PC product in industries other than automotive; and Transettlements and York & Associates for the XLT12 product. The company contends that there are currently no competitors for its Electronic Data Interchange Management System product.

Key Products and Services

Approximately 65% of ABC's revenue is derived from software products, 20% from turnkey systems, and 15% from professional services.

XLT12 is an IBM 30XX and 43XX mainframe ANSI X12 translator used for EDI communications in many industries. The product was introduced in January 1987 and updated in April 1988 to version 1.10. A new update will run in the IMS and CICS environments. XLT12 sells for $25,000. There are currently seven installations of the product.

Electronic Data Interchange Management System (EDI-MS) is a family of EDI and related product modules developed specifically to provide a customized EDI solution for midrange computer systems running UNIX V. The product supports the ANSI X12 standard and sells for $15,000. EDI-MS was introduced in January 1988.

Electronic Data Exchange PC (EDE-PC) is a PC-based, ANSI ASC X12 generic EDI communications application used for general business document transfer between companies in many industries. EDE-PC was introduced in 1986. Version 1.14 was released in May 1988. Pricing is on a per-trading-link basis and runs between $2,000 and $3,000 for one to three trading partners. For ten trading partners, the price is $5,000.

Automotive Data Communications is a PC-based, fixed-length, proprietary data communications application designed specifically to meet the communications requirements of vendors to the automotive industry. Automotive Data Communications supports the AIAG standard. The product was introduced in 1984; the current version, 4.28, was released during third quarter 1987. Pricing is comparable to the EDE-PC product.

Recently introduced is EDI-SHARE, an EDI processing service that enables lower-volume users to lease computing time on ABC's host systems to meet the requirements of their trading partners. The service is currently priced at $75 per month.

ABC services include a bimonthly newsletter for its customers, EDI presentations, consulting and EDI implementation services, and coordination of account management functions between the customer and the participating VAN. In addition, ABC provides customized EDI products.

ABC's EDI software supports the following third-party and proprietary networks: Control Data, GE Information Services, IBM, Kleinschmidt, McDonnell Douglas, Telenet, Chrysler, Ford, and General Motors.

ABC is a Marketing Assistant Participant for IBM and a service agent for GE Information Services. ABC is also a recommended software vendor for McDonnell-Douglas and Control Data.

Industry Markets

The company provides EDI products and services to the following industries: apparel, automotive, chemical, electrical, government, paper, pharmaceutical, transportation, and wholesale.

Mazda selected ABC as the exclusive supplier of PC-based translators to its vendors. ABC also participated in all phases of account management and EDI implementation for Mazda. Diamond Star Motors (a joint venture between Chrysler and Mitsubishi) also has selected ABC as its exclusive EDI software supplier.

Geographic Markets

ABC sells EDI products and services in the United States, Canada, and Mexico. The company sells its products directly and through its affiliates, ABC Canada Ltd. (Toronto, Ontario), ABC Computer Services (Farmington Hills, MI), and Computer Methods (Livonia, MI).

Strategies

ABC officials see the company's relatively long history and experience in EDI as a competitive strength. They look forward to leveraging the resources now possible through the company's new ownership (T and B Computing is part of an organization representing nearly $3 billion in annual sales) to expand ABC's market coverage globally, and to underwrite new product development.

COMPANY PROFILE

B
ACS NETWORK SYSTEMS, INC.

1485 Enea Court
Concord, CA 94520
(415) 827-3820

Lew Jenkins, President
Limited Partnership
Total Employees: 15
Total Revenue, Fiscal Year End
12/31/87: $1,500,000*
12/31/88: $4,000,000*

*INPUT estimate

The Company

Founded in 1978, ACS Network Systems, Inc. provides electronic data interchange (EDI) translation and communications software for IBM midrange computers. The company was founded in 1986 as Apparelnet, named after its first product, an on-line data base for the sewn products industry. The name change in March 1987 marked an expansion into other industries.

INPUT estimates that the company's 1987 revenue was $1.5 million, and 1988 revenue at $4 million.

As of June 1988, ACS Network Systems had 15 employees.

Key Products and Services:

ACS Network Systems derives all of its revenue from EDI products.

EDI/36 and EDI/38 and a version for the IBM AS/400 are data communications and translation software for electronic data interchange. These packages enable users without prior communications experience to implement EDI with their suppliers or trading partners. The software supports translation of the ANSI X12, TDCC, and UCS standards and is written in native IBM Report Program Generator (RPG) code. EDI/36 sells for $5,000. EDI/38 sells for $8,000.

In late 1988, ACS issued Release 3.0 of its software. Among features of the new release are a single-port dialing and communications scheduler, allowing operator-free EDI transmissions. The new ACS software is said to be easier to install, allows for more accurate verification of transactions, and is easier to link to either public or private networks than was the previous version.

Also, functional acknowledgements can now be issued in both UCS (grocery) or ANSI codes, depending on trading partner needs. In addition, the new software can capture a network session on tape or floppy, which can then be mailed to trading partners if they aren't set up for EDI.

This feature also allows a company to send large amounts of data without incurring network charges, useful when time is not a consideration.

ACS Network Systems' software provides third-party network interfaces for McDonnell-Douglas, Sterling Software Ordernet, Kleinschmidt, Control Data Redinet, General Electric, and the IBM Information Network.

ACS Network Services sells its products through both direct and indirect marketing channels. The company has marketing agreements with several third-party network providers, including General Electric, Sterling Software Ordernet, IBM Information Network, and Control Data. It also has relationships with third-party software houses, including J. D. Edwards, Pansophic, and Future Three.

Remote support is provided through EDITH (EDI TeleHelp), which allows an ACS technician to sign onto a customer's computer to work on any problems that may arise.

ACS also provides professional services, such as integrating its EDI software with other applications. These services are priced on a per-job basis.

Industry Markets

ACS Network Systems provides its products and services to EDI customers in the apparel, automotive, banking, electronics, government, medical, retail, medical, retail, software, and telecommunications industries.

Geographic Markets

During 1987, all of the company's sales were within the United States. However, ACS Network Services has begun to expand, selling its products in Canada and other countries. As of late 1988, the company had installed approximately 280 packages.

Strategies

ACS Network Systems' strategy is to focus on products for IBM S/36, S/38, and most recently, on AS/400 environments.

The company has successfully expanded into industries beyond those of its related firm, Apparel Computer Systems. The company's development from a niche software company—while carrying the risk of being typecast—has benefited from access to several hundred apparel industry installations.

ACS has leveraged a small sales force through a variety of network service alliances, and through a relationship with Pansophic that recommends ACS' products to its clients. At one point, it was anticipated that ACS' relationship with GE Information Services (GE IS) would lead to

its product being aggressively sold by the GE IS sales force. However, GE has developed its own packages.

ACS has other avenues for expansion. INPUT believes that a large measure of the company's future will hinge on the acceptance of the IBM AS/400 system, and in some measure, on the relative success of the IBM Information Network's EDI services. IBM's internal EDI implementation using the company's products will also likely enhance ACS' prospects for market acceptance.

COMPANY PROFILE

C
AMASG INC.
2 Toronto Street, Suite 400
Toronto, Ontario, M5C 2B5
(416) 362-9424

Patrick Forbes, VP Sales and Marketing

Overview

AMASG Inc. is a Canadian software and hardware development company specializing in the development of EDI-associated translation, communications, form generation, and application interfaces.

The company's primary product, GEDIT (Global Electronic Data Interchange Technologies), is written in Ryan McFarland Cobol. It is supported on hardware ranging from the IBM PC AT in the DOS operating system environment to the AT&T 3B2/600 under the UNIX operating system. The GEDIT system can also run on mainframes, under any operating system where a Ryan McFarland runtime may be run.

The GEDIT system enables a user to build a rule base for the communications and translation process of any X12 format that may, if the user requires, provide error checking and data verification at the application level.

AMASG's products are primarily marketed to those users using point-to-point communications in the automotive industry using the AIAG adaptation of the ANSI variable length X12 standard. The products also support various fixed-length proprietary formats such as those of Ford, General Motors, and Chrysler.

COMPANY PROFILE

D
AMERICAN CUSTOM SOFTWARE
P.O. Box 189
Cookeville, TN 38503
(615) 537-6516

John Brady, President
Private Corporation
Total Employees: 10
Total Revenue, Fiscal Year End
11/1/88: $1,000,000*

*INPUT estimate

The Company

Founded in 1984, American Custom Software provides electronic data interchange (EDI) translation and communication software products and professional services.

American Custom Software, Inc. reported that revenue has grown at least 100% per year during each of the last three years. INPUT estimates that revenue for the fiscal year ending November 1, 1988 was $1 million.

As of June 1988, the company had 10 employees.

Key Products and Services

The Business Partner Network is American Custom Software's private EDI network. Its first implementation was at the Chrysler Electronics Division's new state-of-the-art just-in-time (JIT) facility in Huntsville, AL. The Business Partner Network connects Chrysler to its suppliers for electronic transfer of advance ship notices and order releases. The system was designed for up to 4,000 suppliers to be on-line with Chrysler, without the use of a third-party network.

The Business Partner runs on an IBM PC XT, PC AT, or PS/2 Model 30, acting either as a standalone system or as a front-end to a mainframe or minicomputer.

The communications portion of the Business Partner, which contains automatic receive, automatic send, and electronic mail functions, sells for $2,000. The translation portion sells for $3,500.

The single connection series sells for approximately $2,500, which includes a modem and maintenance for one year. Discounts are available for additional modules.

Professional services offered by the company include EDI consulting services, program modification and development, on-site training, and training seminars.

ACS also provides a bar-code labeling system called the ACS Laserbar. The system includes the Barcode Assistant software package and the OASYS Silver Express laser printer.

Industry Markets

American Custom Software, which initially served the automotive industry, now serves the EDI needs of many industries, including manufacturing, retail distribution, and transportation.

The company targets Fortune 1000 companies and currently has more than 400 customers.

Geographic Markets

American Custom Software currently sells its products and services within the United States.

To distribute its products and services, the company uses a direct sales force as well as an automotive dealer network and a third-party network, Translink, located in Dayton, OH. The company also is a participant in IBM's Marketing Assistance Program.

Strategies

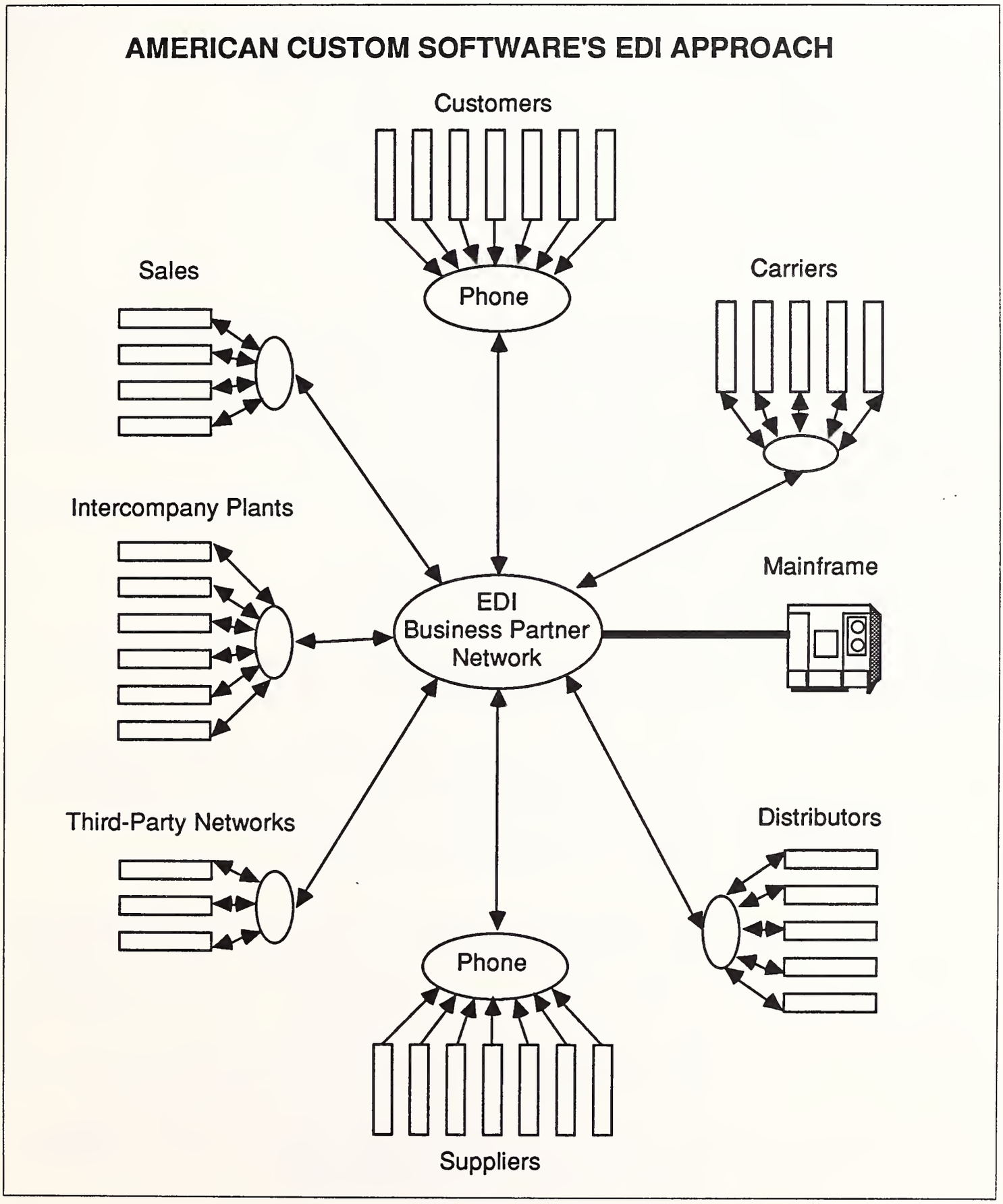
American Custom Software has positioned its product to allow a trading cluster to avoid third-party networks. The EDI Business Partner Network is designed for use in a trading cluster via direct phone lines. However, the software also offers access to third-party networks.

In addition to translation and communications, software associated with this approach generates error reports, controls special processing as needed, profiles all business partners authorized to use the system (along with their operating parameters), maintains a communications log and creates back-up files.

American Custom Software believes that, by using point-to-point communications, users eliminate monthly fees and the loss of data system control associated with third-party networks.

Exhibit II-1 shows a schematic of American Custom Software's approach to EDI.

EXHIBIT II-1



COMPANY PROFILE

E
THE APL GROUP INC.

644 Danbury Road
Wilton, CT 06897
(203) 762-3933

George Brigham, President
Private Corporation
Total Employees: 12
Total Revenue, Fiscal Year End 3/31/88: $1,000,000*

*INPUT estimate

The Company

The APL Group was founded in 1983 by George Brigham and Daniel Codman for the sole purpose of developing software for electronic data interchange (EDI). The APL Group provides EDI software products; turnkey systems; professional services such as customization and consulting; and related services such as training, hotline support, remote diagnostics, and system enhancements.

INPUT estimates that for the fiscal year ending March 31, 1988, revenue for the company was $1 million.

Currently, the APL Group has 12 employees.

Key Products and Services

Approximately 90% of the company's revenue is derived from software products and 10% from professional services.

QualEDI, originally introduced in 1984 under the name APL Computer-to-Computer Document Interchange (ACDI), is primarily translation software for electronic data interchange. The complete QualEDI system includes a base translator plus any documents the user requires.

As of mid-1988, more than 60 QualEDI systems were installed.

- The QualEDI front end acts as either a front end to a mainframe or mini, or as a standalone workstation. It features modes for testing both the mainframe interface and new correspondents. The front end sells for $3,200.

- The QualEDI service bureau is an enhanced mode of the front end. The user of the system is not the sender or receiver of the documents, as in the front-end mode, but serves instead as the service bureau for a number of internal correspondents who are the real senders and receivers. The user system is, in this case, an interface between multiple internal and multiple external correspondents.

- The multiple correspondent workstation enables the PC to act as a standalone, key-entry terminal for sending and receiving EDI documents with any number of trading partners. The multiple-correspondent workstation sells for $2,700.

- The single-correspondent substation is used for communicating with only one correspondent, and sells for $1,650.

- QualEDI operates on any MS-DOS PC/XT- or PC/AT-compatible microcomputer equipped with a serial port, an internal clock, 640K of RAM and 10-megabyte hard disk, a monochrome monitor, and an 80-character printer. A modem and communications software are required for communications.

- QualEDI supports the following standards: ANSI X12 (all industries including CIDX, AIAG, CDX, VICS); UCS (grocery/retail); WINS (warehousing); TDCC (transportation); and EDIFACT (international).

- The data communications networks supported by the product include the following: McDonnell Douglas, Ordernet, Kleinschmidt, Western Union, GE IS, CNCP, CompuServe, Control Data, Railinc, and IBM (APL participates in the IBM Application Specialist Program). Additionally, the software supports point-to-point implementations.

- Communications software associated with QualEDI is Mirror, developed by Soft-Cone Distributing (Tallahassee, FL).

APL is now strategically allied with Greentree Software (New York, NY), which produces CAP3 Computer Assisted Purchasing software. The alliance is intended to provide complete EDI capability to purchasing professionals.

The APL Group provides professional services such as customization and consulting services, in addition to providing its customers with installation services, a tutorial demonstration, and hotline support.

Industry Markets

The APL Group sells its EDI products and services to all industries.

Geographic Markets

The APL Group sells directly and through VAR distribution channels. VARs are responsible for approximately 10% of sales. The company has installations in the United States and Canada.

Strategies

APL claims that the underlying dBase structure of its EDI translator provides the flexibility to respond quickly to changes in the standards.

The company has evidently secured financial backing to pursue its perceived market. New marketing and sales staff have been added, the company is publishing a newsletter, and it has entered a strategic alliance with CNCP, a Canadian network service company, which is selling EDI services primarily to suppliers of Canadian natural resource companies.

COMPANY PROFILE

F
BAGGERLY & ASSOCIATES

1420 N. Claremont Blvd.
Suite 110B
Claremont, CA 91711
(714) 625-7917

Carole A. Baggerly, President
Private Company
Total Revenue, Fiscal Year End
12/31/87: $500,000 *

*INPUT estimate

The Company

Baggerly & Associates, formed in 1983, provides electronic data interchange (EDI) application software products and professional services.

Key Products and Services

The *EDI*BUSINESS*SYSTEM*, introduced in May 1988, is an integrated EDI application system built on the X12 data base to process, versus translate, business transactions. *EDI*BUSINESS*SYSTEM* modules include purchasing, quotations sales order processing, accounting, and communications.

The *EDI*PROFILE*SYSTEM*, also introduced in May 1988, is a tool used to define and distribute EDI transaction sets as well as programs for the X12 data dictionary. The tool enables users to capture data dictionary information without re-keying it and distribute the information electronically to trading partners. In addition, the software is used to publish implementation guidelines for various industries.

The Trading Partner Installation Program is a start-to-finish process including custom software, installation, and support required to set up trading partners. Baggerly & Associates provides a customized version of the *EDI*PROFILE*SYSTEM* along with the *EDI*BUSINESS*SYSTEM*, and installation with the customer's choice of trading partners.

Industry Markets

In the past, the company has sold its products and services mostly to the aerospace and electronics industries. More recently, the company's market has expanded to include the health care industry and the government sector.

Geographic Markets

Baggerly & Associates provides EDI products and services throughout the United States and Canada. The company has plans to expand into such areas as the United Kingdom and Hong Kong.

Strategies

Baggerly is building on its expertise in professional services and technical training to offer new EDI software products. Its primary application takes a unique approach in that it is built on a data base, and therefore data does not need to be translated from internal flat files to the public standard.

COMPANY PROFILE

G
BIRMINGHAM COMPUTER GROUP, INC.

400 W. Maple
Suite 202
Birmingham, MI 48011-1498
(313) 540-0640

Charles S. Townsend, President
Private Company
Total Employees: 20
Total Revenue, Fiscal Year End
6/30/88: $2,000,000

The Company

The Birmingham Computer Group (BCG) was formed in 1984 from a consolidation of Phoenix Data Systems and Townsend Management Systems. BCG provides software products, consulting, and implementation services. Software products offered range from accounting (order entry) to electronic data interchange (EDI) applications.

Key Products and Services

Approximately 70% of BCG's fiscal 1988 revenue was derived from EDI software products. Fifteen percent was derived from professional services. The remaining 15% was derived from accounting software, Material Requirement Planning (MRP), Statistical Process Control (SPC), Computer Aided Design (CAD), and bar code labeling software products.

The Automotive Release System (ARS) enables suppliers to accept, monitor, and schedule production orders from automobile manufacturers, with the added capability of scheduling and tracking shipments for a just-in-time (JIT) inventory system. ARS is available as a standalone system for microcomputers, as a front-end processor for minicomputers and mainframes, or as a front-end translator for manufacturing programs for Hewlett-Packard HP3000 and DEC VAX minicomputers.

The Document Transmission System (DTS) is available for nonautomotive industries. DTS is table-driven and supports any transaction set within TDCC, WINS, and UCS, as well as AIAG X12.

The price for the microcomputer version ranges from $1,990 to $8,000 depending on the modules included; for the HP3000 and DEC VAX, prices run from $5,500 to $25,000, also depending on the features included. For example, the system can include an order entry system called, Material Release Master Maintenance, used to maintain releases outside of a conventional order entry system.

Typical integration projects involve integrating the EDI software with MRP or bar code label applications and, in the case of multiple trading partners, setting up the system for use with third-party networks.

Industry Markets

BCG targets automotive, electronics, and aerospace manufacturing, mass retail, and warehousing operations.

Geographic Markets

BCG distributes its products and services throughout the United States, Canada, and Mexico. The company plans to expand further internationally.

BCG sells both directly to its customers and through its strategic alliances with ASK Computer Systems, Hewlett-Packard, Management Science America (Atlanta, GA), Effective Management Systems (Milwaukee, WI), and MDSS (Cleveland, OH).

Strategies

BCG is attempting to expand its market beyond the automotive industry. Accordingly, its several strategic partnerships will be important in this plan.

The company has several strengths. For one, it is more than an EDI software provider. In addition to professional services capabilities, it has other applications that can be integrated with EDI functionality. This software is installed in probably 200 sites, offering an avenue for account development through its EDI software.

COMPANY PROFILE

H
CDC REDINET SERVICES

14725 Detroit Avenue
Lakewood, OH 44107
(800) 321-2012

David Pond, Executive Manager
Division of Control Data Corporation
Total Employees: 25
Total Revenue, Fiscal Year End
12/31/87: $2,000,000*

*INPUT estimate

The Company

Redinet Services, formed in 1984, is the group within Control Data Corporation that provides electronic data interchange (EDI) network services, translation and communications software products, and professional services.

As of June 1988, the group consisted of 25 nondedicated employees.

INPUT estimates revenue for the group was approximately $2 million for the fiscal year ending December 31, 1987.

Key Products and Services

Approximately 75% of Redinet Services' 1987 revenue was derived from EDI network services, 20% was derived from EDI translation and communication software, and the remaining 5% was derived from professional services.

REDI-EXCHANGE translates business documents from a company's in-house data format to the ANSI X12 standard format, and vice versa. REDI-EXCHANGE software runs under the MVS or MVS/XA operating systems and has two components: REDI-EXCHANGE Flat File and REDI-EXCHANGE Custom Converters.

- REDI-EXCHANGE Flat File software is universal to all REDI-EXCHANGE users. REDI-EXCHANGE Flat File translates X12 files received from trading partners into a standard flat file format. It also translates standard flat files into X12 files that can be sent to suppliers and customers.

- REDI-EXCHANGE Custom Converters are custom-coded programs that translate between a private format and a standard flat file. A converter takes a file created by an in-house system and creates a standard flat file. It also converts incoming standard flat files into private formats.

- REDI-EXCHANGE handles all ANSI-approved X12 documents, including the following: invoice, remittance advice, material release, price sales catalog, request for quotation, response to request for quote, purchase order, ship notice/manifest, purchase order change request, receiving advice, purchase order change acknowledgment, and functional acknowledgment. REDI-EXCHANGE can be used together with CALL-LINK or REDI-LINK.

  - CALL-LINK is the basic communications software tailored for use with REDINET. The software allows an IBM mainframe to emulate a 3780 for bisynchronous communications. CALL-LINK operates in the MVS and DOS environments.

  - REDI-LINK, the company's premium mainframe communications software, is designed to connect to any remote system that can accept 2780/3780 bisynchronous connections. It is a sophisticated scheduling and tracking package developed especially for EDI. REDI-LINK software runs under the MVS or MVS/XA operating systems.

REDI-PRINT mainframe software is used to print standard X12 format business documents. REDI-PRINT is driven by tables, which can be modified. The system permits customization of printed documents and allows for expansion of tables to handle industry-specific documents. REDI-PRINT runs under the MVS or MVS/XA operating systems.

REDI-MICRO, the EDI microcomputer application, contains the following modules: Purchase Order & Purchase Order Acknowledgements, Material Releases & Shipping Notices, Invoices, Request for Quote & Response to Request for Quote, and Two Way Flat File Interface.

REDI-DOC is a microcomputer ANSI X12 document print program used to print out EDI transactions.

REDI-COMM is Redinet's microcomputer communications software. REDI-COMM features automatic operation, checkpoint/restart, error detection and correction, and asynchronous or bisynchronous protocols.

REDI-SET-GO is educational software used to understand the ANSI X12 standards and the basic concepts of EDI. It was developed by Program Sciences Incorporated, which is also profiled in this volume.

The REDINET network allows users to trade with those currently using EDI as if they were also on the REDINET network. REDINET is currently interconnected with the following companies' networks: TranSettlement, McDonnell Douglas (EDI*NET), IBM (Information Network), General Electric (EDI*EXPRESS), Sterling Software (ORDERNET), and Kleinschmidt. Control Data believes that providing this capability encourages the use of EDI and benefits the entire EDI industry.

Industry Markets

Redinet Services targets all industries with its EDI products and services. In the past, the company successfully targeted the automotive industry. Now the company also targets discrete and process manufacturing segments, including apparel, textiles, and petroleum, as well as the industrial and retail distribution and health-care industries.

Geographic Markets

Redinet Services sells its EDI products and services throughout the United States and Canada. The company currently has limited coverage in Europe.

Strategies

CDC's overall strategy is to engage only in businesses that are a strategic fit and meet its criteria for financial success.

Control Data's EDI software strategy appears to have been focused on providing the lowest cost solutions. By offering micro software, CDC feels it is facilitating EDI usage by smaller companies that need to electronically communicate with larger trading partners as a condition of doing business.

Some of CDC's lower-priced EDI packages are configured to work only with the Redinet service, meaning they are offered as an accommodation to prospective network users. The packages can be enhanced for other networks, but since CDC provides interconnections to most other third-party networks, this is not necessary.

CDC markets its EDI services and products through its Lakewood (Ohio)-based MIS division. This approach was taken to combine product ownership, technical expertise, and marketing. The company feels that this integration leads to superior service, one of the few areas in which a vendor can differentiate. Since inquiries regarding EDI often originate from IS departments, having technically oriented personnel as the first customer interface can lead to innovative responses to technical considerations. The company believes this approach may make the difference in closing sales.

COMPANY PROFILE

DATA DESIGN ASSOCIATES

1279 Oakmead Parkway
Sunnyvale, CA 94086
(408) 730-0100

David D. Lowry, President
Private Company
Total Revenue, Fiscal Year Ending March 31, 1988: $17,000,000

The Company

Founded in 1973, Data Design Associates (DDA) develops mainframe financial application software.

DDA has approximately $17 million in annual revenues, and with an operating profit of more than 25%, has one of the highest profitability rates of any mainframe applications software company.

Key Products and Services

DDA's software is designed for IBM 43xx, 30XX and plug-compatible mainframe processors, as well as DEC VAX systems. In late 1988, the company introduced PC/AT versions of its software.

DDA systems are based on a common design formerly called "Advanced System Architecture" but now called the Eqqual Architecture. This design features modular components in each application, and allows integration across all systems.

The company's EDI products are DD-AIM, a generalized translator that can be used to convert data from one system to another, and DD-EDI, which is a software and professional services package for EDI.

Approximately $300,000 of DDA's fiscal 1987 revenue was derived from EDI software, professional services, and other related services.

Other mainframe and AT products are:

- General Ledger
- Accounts Payable/Purchase Control
- Fixed Asset Accounting
- Project Accounting System

Several products work with the following principal application packages:

- DD-View, an interactive query system
- DD-Link for micro-to-mainframe communications
- DD-AIM, a generalized translator
- DD-EDI, for electronic data interchange
- DD-Paint, for customized screens

Industry Markets

DDA has more than 800 customers in banking and financial industries, distribution, medical services, process manufacturing, utilities, transportation, and service industries.

As of early 1988, approximately 17 EDI modules were being used by DDA's customers.

Geographic Markets

DDA has sales offices in Greenwich (CT), Chicago, and Dallas, as well as its Sunnyvale, CA, headquarters.

Strategies

DDA is largely employee-owned, and has a slow growth philosophy to maintain high quality standards for a limited number of products.

The company points to its 15-year history and favorable balance sheet as a competitive advantage.

Because DDA's EDI software is sold with its other applications, all of which are based on a common architecture, the company says its ability to maintain and service its products is enhanced.

COMPANY PROFILE

J
DNS ASSOCIATES, INC.
1 Militia Drive
Lexington, MA 02173
(617) 862-8569

Hugh W. Stewart, President
Private Company
Employees: 10
Total Revenue, Fiscal Year End
8/31/88: $2,000,000

The Company

DNS Associates, founded in 1978, provides software development and consulting services to transportation and other distribution companies. Specifically, the company has developed most of its expertise in the railroad industry. The company's subsidiary, Phoenix Services, provides disaster recovery services for Prime computer users. The firm also offers maintenance management software for field service providers.

As of September 1988, DNS Associates had 10 full-time permanent employees, as well as outside consultants available for specific contract work. In addition to its Massachusetts location, there are Washington, D.C., and Pottstown, PA, sales offices.

Total revenue for the company was approximately $2 million for the fiscal year ending August 31, 1988.

Key Products and Services

Approximately 50% of DNS Associates' fiscal 1988 revenue was derived from EDI software, professional services, and other related services. Another 5% of the company's revenue was derived from its maintenance management software, Service Edge, which is sold to field service companies. Less than 5% of revenue was derived from the company's subsidiary operation, Phoenix Services, which provides disaster recovery services for Prime computer users.

- The remaining 40% of the company's revenue is derived from consulting services (non-information-services) provided to the transportation industry. Specifically, the company has developed most of its expertise in the railroad industry.

Although DNS Associates introduced its microcomputer-based EDI software in 1986 as a result of a client relationship with a railway, the company now provides its EDI software and professional services to all industries. In addition to running on the IBM PC and compatible computers, the software also is now available for IBM mainframes (MVS), DEC VAX (VMS), and other minicomputers (UNIX).

EDI/EDGE is a flexible EDI document-handling system that allows a user to describe and transmit any type of document in any EDI format, while being compatible with all published EDI standards, including ANSI and TDCC. EDI/EDGE includes five major components:

- The *User Interface* enables documents to be created, stored, retrieved, printed, and transmitted. A variety of aids, including table lookups and data type checks, are available to assure accurate input.

- *Files* stores transactions and connects to EDI communications to transmit and receive information electronically. The Files system also has provisions for backing up data and purging old completed transactions.

- *Forms* permits the creation and storage of custom-designed forms using the specific items required in a format compatible with existing operations.

- *EDI Communications* handles both transmission and receipt of EDI transactions. This system runs in a "background" mode so communications can occur simultaneously with other operations. When transmission is initiated by a trading partner, the EDI/EDGE workstation is able to receive the information unannounced.

- *Print* provides a paper copy so the same system also can produce documents for non-EDI trading partners. A physical paper record may also be required for approval signatures and for departments operating in a paper environment.

In addition, DNS Associates provides modifications to EDI/EDGE software, consulting services for forms design, and custom software development. Services such as telephone support, the EDI/EDGE Newsletter, and the EDI/EDGE user group are also provided.

A recent modification to EDI/EDGE for a railroad places the software at a central site for directly receiving inbound messages, and acts as a front-end workstation to upload received messages and download pending outgoing messages from the corporate mainframe.

Industry Markets

Despite its origin in the railroad industry, EDI/EDGE is a horizontal application. DNS Associates targets companies that may already have PCs, but have no programming staff to implement a complicated EDI package. Users can install the software, although some training in EDI is required.

EDI clients include BC Rail, Ltd., Boise Cascade, E.I. duPont, Pillsbury, the New Zealand government, and the Australian New Zealand Banking Group, among others.

Geographic Markets

DNS Associates sells its products and services throughout the United States and internationally.

Strategies

The company's strategy is to identify "pushers" who will sell the product for them. "Pushers" are large user companies, such as manufacturers, that want their customers to order via EDI. The company will buy software from DNS Associates and then either give it away or resell it to customers and suppliers.

COMPANY PROFILE

K
EDI, INC.
19630 Club House Road
Gaithersburg, MD 20879
(301) 670-0811

Ralph W. Notto, President
Private Company
Total Employees: 24
Total Revenue, Fiscal Year End
12/31/87: $1,500,000
12/31/88: $2,250,000

*INPUT estimate

The Company

EDI, Inc. was formed in January 1982 by individuals active in the Transportation Data Coordinating Council, the industry trade association most responsible for the promotion of EDI concepts. The company's goal was to develop and market electronic data interchange (EDI) software.

- During 1983 and 1984 the company installed six pilot systems under the sponsorship of the National American Wholesale Grocers Association (NAWGA). These initial installations served as Beta test sites for product refinement and further development.
- EDI, Inc. formally entered the EDI market in January 1985 with the introduction of TELINK.
- During 1985 and 1986 EDI, Inc. developed applications for the railroad and banking industries and also for the Department of Defense. The company has since expanded its markets to other industries, and internationally.

INPUT estimates that EDI, Inc.'s 1987 revenue was approximately $1.5 million. The company expected to grow by 50% during 1988, meaning its estimated 1988 revenue will be approximately $2.3 million.

Key Products and Services

EDI, Inc.'s principal product, TELINK, is microcomputer-based and supports ANSI X12, UCS, WINS, and TDCC (Air, Motor, Ocean, Rail) standards.

- Hardware/software and communications requirements are as follows:
  - Hardware/software: IBM PC AT or compatible, 640K memory, MS-DOS 3.1.

- Communications: 2,400/4,800/9,600 baud autodial/autoanswer bisynchronous, 1,200 to 19,200 baud autodial/autoanswer asynchronous, X.32 (dial-up X.25).

- TELINK functions include:
  - Menu-driven operation
  - Print routines
  - By-product reports
  - Data control features
  - Archiving
  - Supporting utility routines
  - Recovery (in the event of power loss)
  - User control in specifying the system configuration
  - Automatic sequencing of various functions in an unattended mode
  - Error-checking functions
  - Security provisions
  - Resiliency and recovery
  - Automatic unattended operation based on a calendar and clock provided with TELINK and set by the user
  - System configuration module for adapting TELINK to the user environment
  - User-defined menu module to integrate TELINK with other user software
- TELINK, priced at $4,200, has an installed base of 650 systems in the United States and Canada.

Moneylink, introduced in 1986, is an EFT (electronic funds transfer) software package that supports ANSI X12 standards. Moneylink is used exclusively by banks.

In May 1988, EDI, Inc. introduced TELINK MAIN, a mainframe software product based on Tandem architecture.

- The TELINK implementation for Tandem computers consists of nine modules:
  - The *Monitor* module provides the operator interface and control mechanism. Processes can be initiated, suspended, or stopped. Status information concerning past or current activities can be retrieved.
  - The *Host Interface* module provides the gateway for moving fixed record data files between the application systems and TELINK.
  - The *Control* module maintains an information base of data files in the system and acts as a traffic scheduler between the Host Interface module, the EDI translation modules, the Mailbox module, and the Communications module.
  - The *EDI Generator* module controls the translation from fixed record files to the Interchange Standard.
  - The *EDI Interpreter* module controls the translation from the Interchange Standard to fixed record files.
  - The *Mailbox* module controls the distribution of EDI-formatted data and proprietary-formatted data to the appropriate trading partner.
  - The *Communications* module controls the allocation of physical devices and assigns the appropriate Device module to each. This module also controls the scheduling of communications sessions if required.
  - The *Device* module(s) is responsible for the physical movement of data files from TELINK to the trading partner over external communication lines. If required, incoming partner identification information is assigned to the Security module for analysis and validation.
  - The *Security* module is responsible for validating trading partner information and returning to the Device module instructions to accept the trading partner or to terminate the communications session.

Industry Markets

EDI, Inc. markets its software products across many industries, including banking, government, grocery, discrete and process manufacturing, retail trade, transportation, and warehousing.

The company sells directly to users and through distributors. The company's distributors are Ordernet Services (for United States distribution), Telecom Canada, Computerland of Canada, GE Information Services Canada (Canada), Telecom Australia, ACI (Australia, New Zealand), and Dacom (South Korea). The company also has marketing agreements with Tandem, Telenet, and American Tech.

Geographic Markets

EDI, Inc. markets its products primarily in the United States and Canada. During 1987 and 1988, the company began to expand its sphere of operations beyond North America.

Strategies

There is no doubt that EDI, Inc. has "the best name" in EDI software. The fact that the company was started by EDI pioneers now means it must contend with an increasingly competitive marketplace. As a result, the company has enhanced its products to increase their translation speed.

The company, through its president, has taken an active role in a Korean-North American EDI pilot program. This experience will no doubt be leveraged into a higher international profile for the firm.

COMPANY PROFILE

L
EDI SOLUTIONS, INC.
Minnesota Center, Suite 1140
7760 France Avenue South
Minneapolis, MN 55435
(612) 831-9000

Theodore E. Ciochon, President
Private Company
Total Employees: 10

The Company

EDI Solutions, Inc. traces its roots to R.J. York & Associates, founded in 1980 as an MIS consulting firm. In 1984, a Fortune 100 firm commissioned R.J. York & Associates to develop a mainframe-based EDI translation software system. Following the successful installation of this software, the company decided to market the software to other Fortune 500 companies. In 1986, EDI Solutions, Inc. was formed to respond to the EDI marketplace.

Key Products and Services

In 1986 EDI Solutions introduced its EDI software product, EDItran™.

- EDItran supports ANSI X12 and its subsets, including AIAG, VICS, CIDX, EDX, API, EIDX, and TDCC (Motor, Rail, Air, Ocean), WINS, UCS, and EDIFACT.
- EDItran is available for IBM 30XX, 43XX mainframes using MVS or MVS/XA, DOS or DOS/VSE, and IBM System/38, Hewlett-Packard HP 3000 Series, and DEC VAX/VMS minicomputers.
- EDItran is entirely table driven, with all tables accessible by the user for customization.
- EDItran offers the following features:
  - Partner Support Information
    - ° EDItran provides complete partner record-keeping files used to maintain contact information and data communications information. EDItran also provides an optional user-defined area that may be customized to specific needs.
  - Editing and Error Checking

° Error reports indicate severity and required action. EDItran checks and validates compliance to the appropriate standard. This feature includes:

Control numbers
Transaction IDs
Segment IDs
Segment sequencing
Frequency of segments and loops
Presence of mandatory segments
Presence of mandatory elements
Minimum and maximum element length
Element type
Code values
Interelement dependencies

- Control Segment Generation

° EDItran generates the appropriate interchange, functional group, and transaction control segments using the partner file and transaction data. The user specifies the control segment information once for each partner.

- Audit Trial Functions

° EDItran provides complete auditing through user establishment of audit parameters, subset selection, and user-defined areas. It produces records that satisfy specific audit needs.

- Custom File Management Capabilities

° Control of file management is exercised through JCL or system input. This proves to be useful when more than one trading partner simultaneously attempts to communicate with the same computer.

- Partner Specific Decisions

° Some partner specific decisions that may be designated include:

Verification of trading partner ID on transmission and group leaders

Transmission envelopes to be used (ISA, ICS (both versions), BG, and GS)

Valid transactions to be accepted from the trading partner

Transactions and functional groups sent to the trading partner

Segment terminator

Element separator (outbound control segments)

Subelement separator (outbound control segments)

Transaction status (production or test)

Types of acknowledgements

Versions of standards to use

- Full Compression

- Rejected Data Easily Modified

  ° Data that cannot be interpreted is placed in a suspense file for later action. There may be no need to pay for retransmission of this data.

- Functional Acknowledgements Created

  ° Functional acknowledgement transactions may be created to confirm data received. The types of response generated may vary according to the needs of each trading partner.

- Application Link Aids

  ° A code generator is provided that produces COBOL shell programs for linking any transaction in the EDItran tables to the application. The shell may be customized to a unique application format.

- Security Systems

  ° EDItran is compatible with RACF and ACF-2 security systems, and batch files may be encrypted.

• EDItran is priced at $25,000 for the mainframe version and $18,000 for the minicomputer version. EDI Solutions offers on-site installation and training (two days) at no additional charge. Annual maintenance fees are $3,000 and $2,000 for the mainframe and minicomputer versions, respectively.

• There are more than 60 installations of EDItran.

- In June 1988, EDI Solutions released version 3.0 of EDItran with new mainframe features including:
  - More comprehensive audit and control reports
  - CICS trading partner file maintenance capability
  - 25 output ports, for file splitting and staging for transmission or integration into applications
  - Severity of error checker can be set by user (not pre-set)

Industry Markets

EDI Solutions markets its EDI software products primarily to the Fortune 500 companies. These companies represent a diversity of industries, including automotive, chemical, electronics, pharmaceuticals, metals, retail, and paper.

The company has marketing agreements with two distributors to market its software products: LEK Products Marketing, and EDI Plus, a Houston (TX) consultancy.

In late 1988, Sterling Software Ordernet Division (SSW- Columbus, OH) signed an agreement with EDI Solutions Inc. for a perpetual, world-wide, royalty-free license to EDITran, which SSW sells as GENTran mainframe translation software. EDI Solutions continues to own and market the product.

Geographic Markets

One hundred percent of the company's revenue is derived from the United States and Canada. Future plans include expansion into Europe and the Orient.

In addition to its corporate headquarters in Minneapolis, EDI Solutions has an office in Los Angeles.

Strategies

EDI Solutions' strategy lies in focusing on Fortune 1000 companies (particularly manufacturing) and proactively developing EDI software enhancements for their unique needs.

A secondary strategy lies in its strategic partnering, particularly with Sterling Software Ordernet, which has licensed the company's product, and which provides an additional source of revenue.

COMPANY PROFILE

M
EDS OF CANADA LTD.
1615 Dundas Street East
Whitby, Ontario L1N 7S6
(416) 644-7800

John Bowie, President
Subsidiary of Electronic Data Systems Corporation
Total Employees: 1,000

The Company

EDS of Canada Ltd. was formed in March 1985 as a subsidiary of Electronic Data Systems Corporation. The company was formed initially to serve the information processing, systems integration, and telecommunications needs of General Motors of Canada Limited.

EDS Canada offers information processing services to Canadian customers through several business services. These include Systems Integration, Facilities Management, Communications Facilities Management, Program Management, Turnkey Services, and Demand Processing Services.

EDS Canada has more than 1,000 employees.

Key Products and Services

In 1987, EDS Canada introduced EDI*ASSET™, microcomputer-based EDI software.

- EDI*ASSET supports ANSI X12 standards and its subsets. These include standards for the automotive, transportation, electrical, chemical, grocery, and metal industries.
- The hardware and communications requirements are as follows:
  - IBM PC or compatible
  - 640K memory
  - 20 megabyte hard disk
  - Color or monochrome monitor
  - IBM compatible printer with 80-column capability
  - CLEO bisynchronous communications board
- EDI*ASSET is priced at Canadian $3,100.
- EDS Canada offers extensive product support, including customer service Help Desk.

- As of mid-1988, EDS Canada had 80 installations of EDI*ASSET in Canada and 10 in the United States The company sees the United States as a bigger market and has moved sales management of EDI*Asset to the United States offices based in Troy, Michigan. The company expects future sales from United States to be twice that of Canada.

Industry Markets

EDS Canada markets its products across all industries. Most of the customers as of mid-1988 were suppliers to General Motors of Canada, including chemical, electrical, and metal companies. Market expansion is expected to see usage beyond this group.

Geographic Markets

EDS Canada markets its products primarily in Canada and the United States The company also distributes its products in Europe through EDS Europe and EDS France.

EDS Canada has offices in 10 Canadian cities with headquarters in Whitby.

Strategies

EDS has been negotiating with a third-party network for joint marketing of its EDI software. At one time, there were discussions with the Canadian carrier CNCP, but these were broken off.

EDS is clearly promoting its size and experience in its EDI software marketing. The company distinguishes its products and services in the EDI marketplace by offering a "total EDI solution." The company can design and implement EDI systems for large corporations and also their suppliers involving a variety of hardware platforms ranging from mainframes to microcomputers. The company offers numerous support services including consulting, systems integration, and facilities management.

COMPANY PROFILE

N
FORETELL CORPORATION

707 Lake Cook Road
Deerfield, IL 60015
(312) 272-1850

Barry Spilberg, President
James Parker, VP Corporate Development
Owned by Extel, a subsidiary of JWP, Inc.
Total Employees: 21
Revenue, 1987 Fiscal Year (Extel): $10,000,000

Overview

Foretell is a wholly owned subsidiary of Extel Corporation, a maker of message and image communications systems. Extel is a subsidiary of JWP, Inc. (formerly Jamaica Water and Power, an investor-owned utility). JWP is a NYSE-listed company that has diversified into a variety of technical services. It reported 1987 revenue of $637 million.

Foretell Corporation began development of an EDI system for mass retailers in 1984. The company was incorporated in early 1985 and began shipping product late that year to Sears, its first customer. Since then, the company has developed systems for J.C. Penney, Walmart, Montgomery Ward, and Service Merchandise.

Key Products and Services

Foretell's software, called ESP, permits a vendor to communicate directly with the retailer's mainframe to retrieve purchase orders electronically via the user's PC. Once data is captured, the system also performs all of the "paperwork" required for order processing, inventory control, and shipping.

Some customers use private data networks; others use public networks, such as GE Information Services. Foretell customizes its base EDI software package via modules to meet the standards and formats of the network involved.

In late 1988, Foretell introduced ESP II, described as the first Microsoft Windows-based EDI package. The mouse-supporting product, designed for the 286 and 386 generation of microcomputers, is said to offer high speed, flexibility, and supports multitasking. The package incorporates graphics. It can work on a standalone basis, or as a front-end to a mini- or mainframe computer.

Industry Markets

Foretell specializes in the retail industry with its PC-based software.

Geographic Markets

Foretell's sales are primarily in the United States, although a Canadian affiliate of Graphic Scanning/Graphnet (Teaneck, NJ) was demonstrating Foretell's EDI software at a Canadian telecommunications trade show.

Strategies

Foretell is concentrating its efforts on the retail environment where its founders have previous experience.

Foretell says it has designed and constructed a Computer Assisted Software Engineering (CASE) facility allowing it to respond quickly to changes in the EDI environment.

COMPANY PROFILE

FUTURE THREE SOFTWARE, INC.

33113 Schoolcraft Road
Livonia, MI 48150
(313) 261-5609

Walter Keyes, President
Private Company
Total Employees: 25
EDI Revenues (1987): $800,000*

* INPUT estimate

The Company

Future Three Software, Inc. develops and markets software products for the automotive industry. The company focuses on the IBM midrange environment.

Key Products and Services

Over the past 12 years, Future Three has developed numerous software products for the automotive industry. These include:

- Automotive Release Order System
- EDI Translator System
- Manufacturing Systems
- Job Cost
- Financial Applications
- Bar Code

Future Three's EDI software products EDI Translator 36 and EDI Translator 38, introduced in 1983, run on the IBM S/36 and S/38, respectively.

- EDI Translator 36 and EDI Translator 38 are AIAG Phase II certified.

- EDI Translator 36 product features include communications capabilities involving:

  - Material releases and Advanced Shipping Notices (ASNs)
  - Just-in-time (JIT) modules
  - Chrysler electronic invoicing (variable length)
  - Variable length material releases
  - Variable length ASNs
  - Variable length nonproduction purchase orders

EDI Translator 38 product functionality is similar to that of EDI Translator 36. Future Three also offers an equivalent software product for the IBM AS/400 system.

EDI Translator 36 is priced at $22,000; EDI Translator 38 is priced at $33,000.

As of mid-1988, there were 150 installations of Future Three's EDI software products, approximately 130 in the United States and the remaining 20 in Canada.

Industry Markets

Future Three's customers are suppliers to the major automotive companies. A majority of them are in manufacturing and some are in distribution.

Future Three has marketing agreements with IBM and Software System Associates (Chicago, IL).

Geographic Markets

A majority of Future Three's revenue is derived from the United States and the remaining from Canada. The company anticipates increasing opportunities for its EDI software in Canada.

Strategies

While Future Three is currently focused on the automotive market, the company's future plans include developing applications for the distribution and retail industries.

Due to rapid customer need changes, Future Three has had to introduce additional features and functions to its EDI and EDI-related software. These include scheduling, lot tracking, container control, and others.

The company's focus on midrange IBM processors (its products are IBM Logo Products, and the company participates in the IBM Marketing Assistance Program), and the porting of its software to the successful AS/400 computer mean it can concentrate on its technical resources.

COMPANY PROFILE

P
GE INFORMATION SERVICES
401 North Washington Street
Rockville, MD 20850
(301) 340-4000

James McNeary, President
Division of General Electric Company,
Communications and Services Organization
Total Employees: 2,300
Total Revenue, Fiscal Year End
12/31/87: $500,000,000*
Noncaptive Revenue: $470,000,000*

*INPUT estimate

The Company

GE Information Services (GE IS) was formed in 1979 to consolidate General Electric Company's (GE) MARK III worldwide interactive and remote batch processing services, originally introduced in 1965 under the MARK I name. This consolidation resulted in the first interactive processing service commercially available in the United States.

During mid-1985, the company announced a restructuring of its organization aimed at strengthening its competitive position through increased concentration on high-growth, specialized businesses, including business communications, financial management and reporting systems, supplier and dealer systems, international trade and transportation, and a portfolio of EDI products and services.

Key Products and Services

GE IS offers three products in the EDI software arena: EDI*PC™, EDI*T™, and EDI*CENTRAL™. The software supports ANSI X12, TDCC (Motor, Rail, Air, Ocean) and UCS standards. The products are compatible with EDI*EXPRESS™, the company's EDI network service that operates on its MARK III® Teleprocessing Network.

In April 1986, GE IS introduced EDI*PC, a microcomputer-based software product.

- The hardware and communications requirements are:

  - IBM PC, XT/AT or compatible
  - 512K memory
  - 10 megabyte hard disk
  - Monochrome display screen
  - MS-DOS 2.1 or higher
  - Hayes external Smartmodem (1200 baud)
  - Printer (132 column)

- EDI*PC offers the following capabilities:
  - Screen entry of documents
  - Automatic translation of screen-entered documents into EDI*PC's internal flat file format
  - Interfacing with user's in-house computer
  - Preset unattended operations
  - Reporting
    - ° Reports includes both a local file and document log as well as retrieval of reports generated by EDI*EXPRESS
  - Administration
    - ° Entering and maintaining the control parameters required to access the EDI*EXPRESS network as well as the file name conventions on the user's IBM PC or compatible
  - Interfacing
    - ° Interface to user's external electronic mail and word processing modules
- EDI*PC is priced at $1,450. Annual maintenance, free for the first year, is priced at $180 for each subsequent year.
- As of mid-1988, GE IS claimed more than 1,000 installations of EDI*PC.

In April 1987, GE IS introduced EDI*T written in ANSI 74 COBOL for the IBM OS environment.

- EDI*T has the following features and capabilities:
  - Automatic functional acknowledgments
    - ° Automatic generation of the Functional Acknowledgement or Acceptance/Rejection Advice by trading partnership when a functional group is received
  - Table-driven structure
  - Standard compliance checking

° Compliance checking on user's data to help ensure that it meets specified standard formats; performing sequence checking, field editing, and balancing

Sequence checking—Verifying that the segments are in proper order and that all mandatory segments are present, checking the maximum usage of a segment

Field editing—Editing each field for field size, mandatory or optional values, and data values against field type

Balancing—Performing balancing checks on envelope control numbers, envelope control total numbers, hash count totals, and line item count totals

- Envelopes supported

° ISA, BG, ICS and GS envelope structures

- Envelope trailers and control numbers

° Generate the envelope control numbers and control totals, and generate the envelope trailers

- COBOL source code copybooks

° Providing COBOL source code copybooks of the record layouts for the GE IS predefined input file needed by the EDI*T system

- Split-out feature

° Receiving interchanges even if they are not supported for translation by the system, allowing an input file to contain interchanges not supported for translation by the EDI*T system

- System reporting

° Audit report—Generated after the processing of an input file, the audit report contains interchange envelope information, segment counts, and error conditions

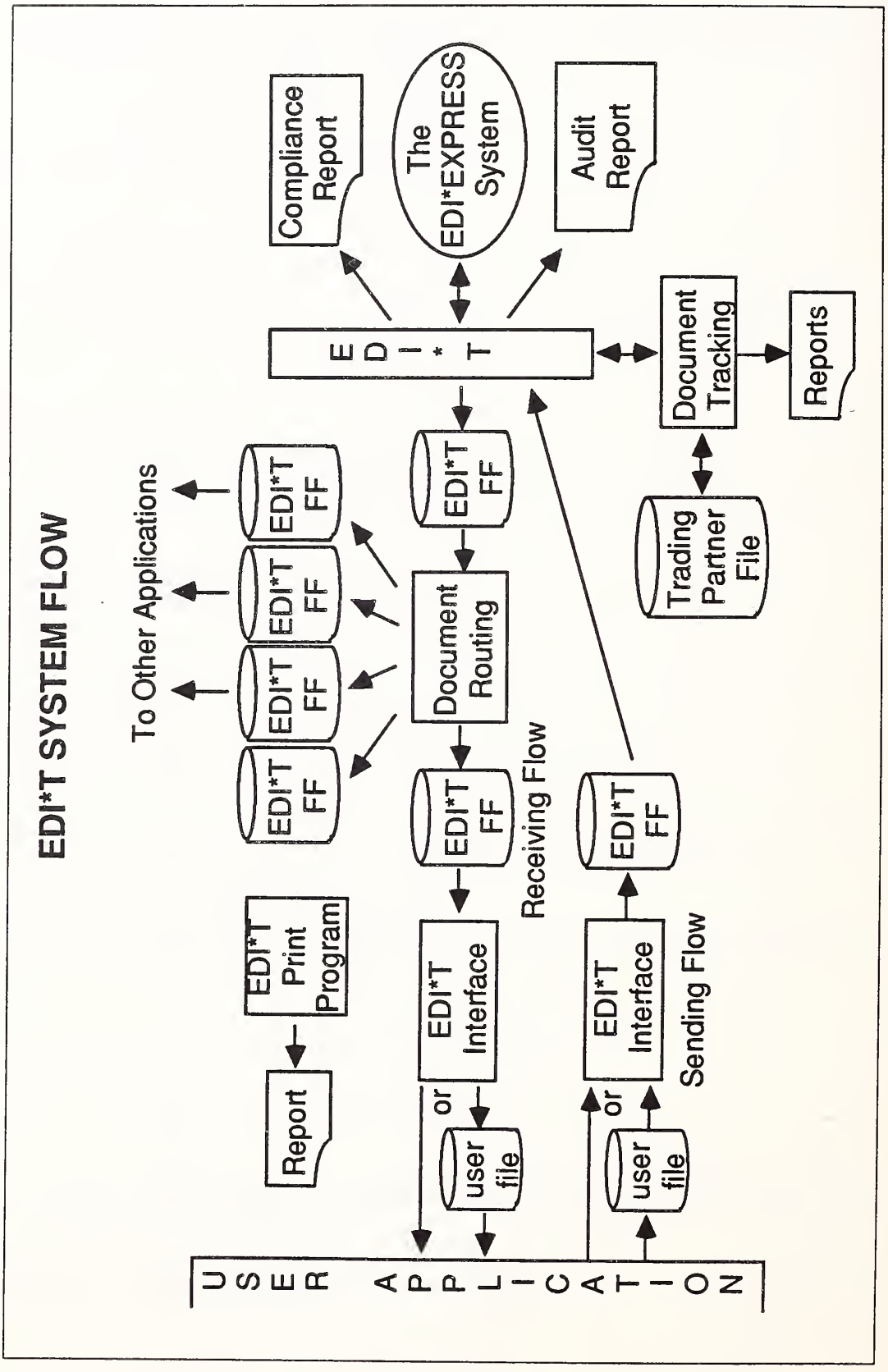
° Error report—Displays the interchanges that contain errors

• EDI*T is priced at $9,500. Annual maintenance, which is free for the first year, is priced at $1,200 for each subsequent year.

• There are 100 installations of EDI*T.

Exhibit II-2 is a schematic showing how EDI*T is intended to be configured.

EXHIBIT II-2



In June 1988, GE IS introduced EDI*CENTRAL, EDI software that runs on IBM mainframes (43XX, 30XX) under the OS/MVS operating system.

- EDI*CENTRAL offers the following capabilities:
  - Translation and syntax-compliance checking
  - Distributed standalone interfaces to applications
  - Exception report tracking of functional groups to and from user's trading partners
  - Internal mailboxing of received EDI documents
  - Support of multiple EDI envelopes
  - Print reports of all supported documents
- EDI*CENTRAL is priced at $20,000, and each additional copy costs $12,000. Annual maintenance, free for one year, is priced at $2,400 per copy.

Industry Markets

GE IS markets its EDI software products across all industries, with the retail industry being the predominant market segment, accounting for 20 percent of revenues. Retail industry customers are retail stores, retail chains, and supplier companies.

Other industry markets include apparel, automotive, chemical, financial institutions, metals, petroleum, and public utilities.

GE IS has marketing agreements with several companies to sell its EDI services. The company has agreements with:

- ACS Network Systems (Concord, CA) for sales to the apparel industry
- American Business Computer (Farmington Hills, MI) for the automotive industry
- Can/Am Tech (Hamilton, Ontario) for sales and support in the metals industry
- McCormack & Dodge (Natick, MA) for software integration
- Microdynamics (Dallas, TX) for DESIGN*EXPRESS in the apparel industry

- Management Science America (Atlanta, GA) for general joint marketing
- Supply Tech (Southfield, MI) for sales to the automotive industry

Geographic Markets

GE IS products and services are offered through more than 80 United States and international offices. The company's EDI software products are marketed in the United States, Canada, and Europe.

Strategies

GE IS' first software offerings were criticized as being limited, a condition which has been corrected with subsequent releases.

The company's EDI*Central product is strategically important, as it addresses a large EDI user need. It enables a corporate IS group to control divisional and branch EDI usage. As many suppliers often must deal with many divisions of the same company, having internal, centralized coordination is valuable.

Although it may not have intended it, GE IS' EDI software sales approach has primarily been seen as a customer accommodation. Because its software is sold in conjunction with network and consulting services, it is seen as a customer convenience. It also increases the contract size, a consideration for a company motivating a commissioned sales force. Offering a "total solution" also helps build customer relationships and generates cross-sales opportunities. GE IS sees the integration of its software with its network services as a competitive strength.

There appear to have been few software sales to customers who are not EDI*Express network users. This is not a problem, as this prospect base is the largest among the third-party services—approximately 4,000 worldwide. There have also be multiple unit software sales within the GE corporate family.

INPUT feels that GE IS has put its relationships with software vendors that act as agents for the network in jeopardy by offering products that compete with the agents' products. Accordingly, several have entered additional network marketing relationships.

However, one relationship, with McCormick and Dodge, is noncompetitive. M&D will integrate its business software with GE IS' EDI software.

COMPANY PROFILE

Q GENZLINGER ASSOCIATES INCORPORATED
Two Northfield Plaza, Suite 212
5700 Crooks Road
Troy, MI 48098
(313) 879-7070

Vance Genzlinger, President
Private Corporation
Total Employees: 18
1987 Revenues: $1,000,000*

* INPUT estimate

The Company

Genzlinger Associates Incorporated is a value-added reseller specializing in developing and marketing software products for the automotive industry. The company was formed in 1971.

In 1980, Genzlinger Associates developed a custom EDI software system for General Safety Corporation, a supplier to General Motors. Subsequently the company modified the software and marketed the product to other automotive suppliers.

Key Products and Services

Genzlinger Associates develops and markets a line of software products catering to the needs of repetitive manufacturers in the automotive industry. The company's products include Master Production Scheduling, Material Requirements Planning, Standard Costing, and Release/Shipment Communications.

The company's EDI software product Release/Shipment Communications supports ANSI X12 and AIAG standards.

- The software, written in UNIX, can run on most hardware platforms supporting that operating system including ITT, NCR, TI, and Honeywell systems.

- The major features of Release/Shipment Communications are as follows:

  - Receives releases directly from customers or third-party networks in AIAG, Chrysler, Ford, GM, Mazda, Navistar, Nissan, NUMMI, and other formats.

  - Prints hourly, daily, weekly, scheduling, and monthly releases in five shipping schedule formats

- Prints raw material requirements (uses bill of materials)
- Prints net change reports
- Generates packing slips
- Transmits shipment notification
- Maintains "cum" shipments
- Prints sales forecasts
- Interfaces with:
  - Master production
  - Material requirements planning
  - Inventory management
  - Bill of materials
  - Standard costing
  - Customer order processing
  - Accounts receivable
  - Bar code labelling

- Release/Shipment Communications is priced depending upon the number of users. The base price is $3,600 and 20 percent of the base price is charged for every four additional users.

In 1985 Genzlinger Associates introduced Entry Level Release/Shipment Communications System for IBM PCs and compatibles with similar features to its primary product.

- Entry Level Release/Shipment Communications System can be upgraded to the company's primary product, Release/Shipment Communications.

- Entry Level Release/Shipment Communications is priced at $3,000 for the full version and $2,000 for the basic version.

Industry Markets

Genzlinger Associates focuses exclusively on the automotive industry. Most of the company's customers are repetitive manufacturers characterized by their long production runs of their products.

The company has a marketing agreement with Honeywell Inc. (Minneapolis, MN) for international distribution of its software products.

Geographic Markets

Genzlinger Associates markets its products primarily in the U.S. and Canada. International sales is achieved through Honeywell.

Strategies

Genzlinger's focuses on the automotive market. Its software standardizes the various releases that a supplier can receive from several manufacturers into one format.

The company's UNIX-based software allows it to adapt it to various computer equipment, and also gives it some enhanced acceptance into engineering and technical environments where this operating system is favored.

COMPANY PROFILE

R
Harbinger Computer Services
1800 Century Place Suite 340
Atlanta, GA 30345
(404) 320-1636

Tycho Howle, President
Private Corporation
EDI Revenues: EDI Product Introduced mid-1988

The Company

Harbinger Computer Services was formed in October, 1983. Its main product was a PC package for smaller businesses to review their bank accounts and perform cash management functions.

In mid-1988, Harbinger introduced an integrated PC software and Tandem-based network service for smaller companies to participate in EDI with their larger trading partners.

Key Products and Services

Harbinger says its software, called InTouch*EDI, avoids direct user interfacing with the complexities of the ANSI X12 codes that may confuse and discourage neophyte companies from using EDI.

The software works with a mouse and interactive, context-sensitive menus. It also supports color graphics and is easily operated.

Networking primarily revolves around the "hub" company, with connections to other third-party firms possible on an "as needed" basis.

Industry Markets

Users of Harbinger's network service/software combination include electronics firms and utility companies such as Atlanta's Georgia Power Company, Compaq Computer, Southern California Edison, and Westinghouse.

Strategies

Harbinger's approach is to provide a low cost, combined software and network services solution to small and midsized companies serving a large hub customer.

Harbinger's marketing strategy does not support a long sales cycle. Rather, the company holds trading cluster seminars and attempts to sign users immediately by offering a free trial of its easily installed software, and flat fee network services for a trial period. It generally receives the implied endorsement of the host company.

The company's focus is on bringing up many smaller trading partners quickly. This has been a difficult task for some "hub" companies who may have implemented EDI with only a relatively few other firms. Harbinger has apparently recognized an opportunity in this phenomena.

COMPANY PROFILE

INTERCHANGE SYSTEMS, INC.

1620 Massachusetts Avenue
Lexington, MA 02173
(617) 862-0010

Carl Drisko, President
Private Company
Total Employees: 17
Total Revenue, Fiscal Year End 12/31/88:
$2,000,000*

*INPUT estimate

The Company

Interchange Systems, Inc. (ISI) was founded in July 1987 to design, develop, market, and support electronic data interchange (EDI) software products.

ISI joined the resources of Momentum Software, Inc. of Lexington (MA), a software product development organization, with Communications Programming, Inc., a Chicago-based consulting group. Momentum Software markets several packages to banks, including Bank Search, a data base software product that tracks how money is moved electronically to a bank.

The founders of ISI have backgrounds in electronic funds transfer and EDI. ISI personnel have built payment systems for both banks and corporations.

- Under contract to the First National Bank of Chicago, the principals of ISI designed, developed, and installed the General Motors Electronic Payment System. This system was designed to use the ANSI X12 820 Remittance Standard to process payments.

Most of the ISI staff of 17 are involved in development, customer support, and consulting. The remainder handle marketing and administrative support.

Key Products and Services

NETPAY, ISI's first product, was released in December 1987. NETPAY is designed to process ANSI 820 formatted payment transactions and to translate the 820 transaction set into several other payment formats. NETPAY can also process several other transaction sets related to payments processing.

- NETPAY supports ANSI X12, TDCC, and EDIFACT standards. The product runs on DEC MicroVAX processors and also on IBM PC/AT and compatible microcomputers.

- NETPAY was designed for banks to service the EDI needs of their customers. NETPAY provides complete EDI transaction processing capabilities and includes the following features:
  - Transaction Processing Features:
    - ° Payment processing
    - ° Payment warehousing
    - ° Payment forwarding
    - ° Multiple proprietary network support
    - ° Affiliate processing
    - ° Return item processing
    - ° Cancellation message handling
    - ° Settlement message handling
    - ° Status message handling
    - ° Payment consolidation
    - ° Debit and credit consolidation
    - ° DDA interface
    - ° ACH interface
    - ° Lockbox interface
    - ° Translation from EDI formats to all corporate ACH formats (CCD, CCD+, CTP, CTX)
    - ° Transmission staging
    - ° Transaction archiving
    - ° Advice-only processing
    - ° Automatic generation of acknowledgements
    - ° Automatic reconciliation of acknowledgements
    - ° Transmission retries

- ° Process flow control
- ° Batch job scheduling
- ° User-defined processing scripts

- Communications Support:

  - ° Asynchronous communication support
  - ° Multiple modem support
  - ° Multiple baud rate support (1200 bps to 19.2 kbps)
  - ° Synchronous communications support (2780/3780)
  - ° Value-added network support
  - ° Multiple file transfer protocols
  - ° Automatic retries
  - ° Automatic redials

- Security Features:

  - ° Password security
  - ° Communications logon security
  - ° Encryption and authentication of messages
  - ° Operator profiles
  - ° Encrypted data base fields

- Payment Advising Facilities:

  - ° EDI advices
  - ° Multiple BAI/lockbox advice formats
  - ° MCI mail advices
  - ° Paper advices
  - ° Multiple advices for one payment
  - ° Multi-tiered advising
  - ° Off-network advices
  - ° Advice consolidation

- Reporting Features:

  - ° Statistical reporting
  - ° Complete audit trails
  - ° New account reports
  - ° Settlement reports
  - ° Account balancing reports

- Backup and Recovery Features:

  - ° Transaction logging

  - ° Automatic backups to fixed disk, Bernoulli cartridge, or magnetic tape
  - ° Automated recovery
- Bank Profiles:
  - ° EDI payment support
  - ° ACH member
  - ° ACH capabilities profile
- Customer Service Inquiry Functions
- Trading Partner Profiles
- User-programmable Interfaces

- NETPAY is priced at $25,000 for the IBM PC version and $125,000 for the DEC MicroVAX version.
- NETPAY has been licensed by various banks, including First National Bank of Chicago, Mellon Bank, Manufacturers Hanover Trust, and Toronto-Dominion Bank.

In February 1988, ISI introduced NETMATE, a companion product to NETPAY, which permits a corporation to communicate and process all types of EDI transactions. NETMATE is distributed by NETPAY banks to their customers.

- NETMATE supports ANSI X12, TDCC, and EDIFACT standards.
- NETMATE runs on DEC MicroVAX processors and IBM PC/AT and compatible microcomputers.
- NETMATE offers the following features:
  - Message Handling:
    - ° Receipt, reformatting, and printing of X12 messages
    - ° ANSI X12, CCD, CCD+, CTP, CTX, ACH (Automated Clearing House), and BAI (Bank Administration Institute) formats
  - Communications:
    - ° Interface to VANs

  - ° Authentication and encryption
  - ° Dedicated or shared communication lines
- Inquiry Facility: Message review
- X12 Payor
- Office Systems Integration:
  - ° Integration with bank's existing accounts payable and accounts receivable systems

• NETMATE is priced at $1,000.

ISI offers additional training and consulting, and custom programming ($75 per hour).

With NETPAY and NETMATE, ISI is taking a different strategy in the EDI software marketplace by focusing on financial transactions and targeting banks as EDI service providers and distributors of EDI software.

Industry Markets

ISI's EDI software products are marketed primarily to banks. Other customers include large corporations, being users of NETMATE. Banking customers are generally money center banks, super-regional banks and mid- to large-size regional banks. Corporate customers include grocery, manufacturing, high technology, and other companies.

Geographic Markets

A majority of ISI's revenue is derived from the United States. The company also has successfully sold its software products in Canada.

In addition to its corporate headquarters at Lexington (MA), the company has an office in Chicago (IL).

Strategies

ISI company officials have backgrounds in banking software. The company president is a former Data Architects (Waltham, MA) employee, and a relationship with that banking software firm is maintained.

The company's strategy, targeting banks as potential EDI service providers, does focus on the payment side of EDI, but can include fuller services. As U.S. banks are still hesitant on their role, ISI's approach provides software enabling them to explore options.

Also, as ISI's software operates on DEC VAX equipment, the company benefits from the number of installations of this platform within its target industry.

ISI officials report success in selling its products to Canadian banks following a General Motors of Canada decision to use a U.S. bank (First Chicago) for expansion of EDI/EFT services. GM/Canada found that no Canadian banks were ready for the services they had in mind. ISI's NetPay was originally developed for GM's paperless payments system.

COMPANY PROFILE

T
LDJ INCORPORATED
2200 Stephenson Highway
P.O. Box 219
Troy, MI 48099-0219
(313) 528-2202

Leon D. Jackson, CEO
Private Company
Total Employees: 55

The Company

LDJ Incorporated was formed in 1970 to supply the magnetic materials industry with measurement and control equipment.

In the early 1980s, LDJ realized that the demand for measurement and control products in the magnetics marketplace was limited. The company decided to address the factory automation equipment market and in 1982 commenced product development on a series of products.

In late 1984 and early 1985, LDJ shifted emphasis to plant floor monitoring and statistical process control products. Today LDJ has three divisions: Instrumentation, Magnetics, and Computer.

Key Products and Services

LDJ's family of automation products is called the LDJ Monitor System. It is targeted to the repetitive manufacturer of discrete products. It provides the ability to automatically control and monitor product quality, personnel and machine efficiency, in process and finished inventory, and preventive maintenance. It also provides communication from the factory floor to mainframe computers.

In 1982, LDJ introduced LDJ™ Messenger, to incorporate EDI functionality into its product line. This EDI software product supports most UNIX-based systems including Unisys 5000, Hewlett-Packard HP9000, and Prime EXL.

- LDJ™ Messenger supports ANSI X12 standards.
- LDJ™ Messenger has the following features.
  - X12 Transaction Processing Module:
    - Validate X12 transaction sets
    - Create Accept/Reject sets for transmission back to original sender
    - Update into data base manager format

  - ° Soft table maintenance
  - ° Format X12 transaction sets for transmission
  - ° Process mixed versions, control headers
  - ° Full add-on X12 capabilities via data base

- Communications Module:

  - ° Bisynchronous and asynchronous communications
  - ° Autopilot and auto receive
  - ° Multiple format processing
  - ° Raw data print, inquiry capabilities
  - ° Complete real-time EDI audit trail

- LDJ™ Messenger is priced at $6,000.

- The company claims 60 installations of LDJ™ Messenger.

Industry Markets

LDJ focuses exclusively on repetitive manufacturers, across all industries.

Geographic Markets

LDJ markets its products in the United States and Canada. The company does not use indirect sales channels like distributors and sells directly to users.

Strategies

LDJ's strategy lies in providing a total integrated manufacturing solution, including factory automation for repetitive manufacturers, and to achieve superiority in the field of computerizing and automating the factory floor of these companies.

COMPANY PROFILE

U
LLOYD BUSH & ASSOCIATES
156 William Street
New York, NY 10038
(212) 962-4004

Lloyd A. Bush, President
Private Company
Total Employees: 45
Total Revenue, Fiscal Year End
12/31/87: $3,000,000*

*INPUT estimate

The Company

Lloyd Bush & Associates provides an electronic data interchange (EDI) software product line acquired with Document Interchange Systems Corporation, as well as a systems software product and management consulting services for the financial community.

INPUT estimates that Lloyd Bush & Associates generated $3 million in revenue during 1987, but that less than $1 million was derived from information services.

As of September 1988, the company had 45 employees.

Key Products and Services

Seventy-five percent of Lloyd Bush's revenues are derived from management consulting services provided to the financial community. These services are not considered information services. Fifteen percent of the company's revenue is derived from a fourth-generation language system software product. The remaining 10% is derived from EDI software.

Lloyd Bush's fourth-generation language, MODEL, is a decision-support system. The product is used for building applications in the areas of product planning, investment banking analysis, and government contract bidding. The following modules are included in MODEL: Financial, Forecasting, and Statistical Libraries; Risk Analysis; Box-Jenkins Forecasting; and Hierarchical Consolidation. MODEL generates a self-contained object code.

Lloyd Bush's EDI software product line, known as X-Change, was introduced in 1985. It was originally developed by Program Sciences, Inc., which is also profiled in this volume.

X-Change supports ANSI X12 and is available for the IBM PC and compatibles running under MS-DOS and for Sun Microsystems equipment running under UNIX.

- Trading Partner provides general-purpose, PC-based interchange and supports McDonnell-Douglas, RAILINC, CDC, and GE Information Services proprietary store-and-forward networks. Trading Partner is table driven and does not need updating with added standards. Instead, its data base is expanded.

- EDI-Hub is a multiuser, multi-telecommunications-line system. It is aimed at distribution organizations, purchasing departments, or any other organization that wants to manage communications with a large number of other locations or entities.

- EDI-Satellite is a hub-specific version of the Trading Partner. The system is intended to provide an economical complement to the EDI-Hub and is available only in multiunit quantities.

- EDI-Gateway is a multi-telecommunications-line system for providing EDI front end or communications concentration and conversion for classical data processing systems.

- EDI-E-Mail is an electronic mail system that provides a gateway to AT&T Mail as an EDI network. X-Change then communicates via AT&T Mail. EDI-E-Mail is available packaged with either Trading Partner or EDI-Satellite.

Industry Markets

Lloyd Bush & Associates sells its software products to all industries. Initially, the company was most successful in marketing its EDI software to the railroad industry.

Geographic Markets

During 1987, Lloyd Bush sold its products within the United States through a direct sales force.

Strategies

The company's strategy is to offer low price EDI software to a trading cluster. The company offers to contact a hub company's suppliers, handle network signups and software implementation. Bush consultants will handle all support issues. It says, however, that no training or classes are required. This approach implies a hub-company endorsement of X-Change software.

COMPANY PROFILE

V

LOUIS A. WRIGHT & ASSOCIATES, INC.

14492 Sheldon Road, Suite 300
Plymouth, MI 48170
(313) 459-7760

Louis A. Wright, President
Private Company
Total Employees: 90
EDI Revenues: $300,000 (1987)*
$500,000 (1988)*

* INPUT Estimates

The Company

Louis A. Wright & Associates, Inc. (LWA) develops and markets software systems to meet the needs of repetitive and contract (job shop) manufacturers. The company offers manufacturing planning and control systems, and financial software systems for IBM minicomputers.

Key Products and Services

In 1987 LWA introduced Wright EDI™, its EDI software product. Wright EDI supports ANSI X12 and its subsets, and AIAG, TDCC, UCS, and WINS standards.

- Wright EDI runs on IBM S/36, S/38, AS/400 minicomputers as well as on microcomputers. Microcomputer hardware and communications requirements are as follows:
  - Hardware:
    - IBM PC XT/AT or compatible
    - 384K memory
    - 10MB hard disk
    - MS-DOS 2.0 or higher
    - Wide-carriage printer, 132 column
  - Communications:
    - Bisynchronous communications card
    - UDS 208 modem, 4800 baud
    - UDS 201 modem, 2400 baud
- Wright EDI is table driven and features menu-driven transaction control, on-line transaction viewing, and on-line file maintenance.
- Wright EDI features the ability to print any electronic forms received. Reports are available that describe the system's activity, enabling the user to easily trace the history of each transaction. An inquiry ability

enables the user to see on-screen what has been transmitted and received.

- Wright EDI interfaces directly to LWA's two manufacturing software packages, AMPS for the repetitive manufacturer, and ACCESS™ for the contract manufacturer.

- Wright EDI is priced according to hardware platform:

  - IBM PC XT/AT $3,000
  - IBM S/36 $4,000
  - IBM S/38 $5,000
  - IBM AS/400 $6,000

  - Annual maintenance is priced at 12 percent of the total package price.

- LWA claimed about 80 installations of Wright EDI in late 1988.

Industry Markets

LWA's primary market is the automotive industry. Other industries include apparel, medical, and transportation (common carriers).

LWA's products are also marketed through a network of affiliate companies and distributors in North America, U.K., and Australia.

Geographic Markets

A majority of LWA's revenues are derived from the U.S. and the remaining from Canada, U.K., and Australia.

In addition to corporate offices in Plymouth, MI, LWA has an office in Cleveland, OH, and two offices in Canada: Toronto and London, Ontario.

Strategies

LWA's customer base is largely within its geographical region, with some sales through its distributors. Its primary market is the automotive industry and it has devoted its design, development, and marketing resources to products for this industry.

LWA appears to have added EDI in order to improve the functionality of its repetitive manufacturing software, rather than require its customers and prospects to buy and integrate another company's EDI translator.

COMPANY PROFILE

W MANAGEMENT SCIENCE AMERICA, INC.

3445 Peachtree Road, N.E.
Atlanta, GA 30326-1276
(404) 239-2000

John P. Imlay, Jr., Chairman and CEO
Public Corporation, OTC
Total Employees: 2700
Total Revenue, Fiscal Year End
12/31/87: $258,543,000

The Company

Management Science America, Inc. (MSA) develops and markets a range of application software products for mainframe computers. These include logistics, financial, and human resources software for cross-industry applications, as well as functionally specific applications for manufacturing companies, financial institutions, government organizations, health care providers, educational institutions, distributors, and insurance firms.

In 1982 MSA began development on EDI with the goal of incorporating EDI functionality into its applications.

Key Products and Services

MSA's EDI software product, Expert EDI, supports ANSI X12, TDCC (Air, Rail, Motor), WINS, UCS, and AIAG standards. It was derived from TranSlate, a leading mainframe translator developed by Transettlements (Atlanta, GA). MSA licensed the rights to integrate the package with its other applications.

- Expert EDI is designed for IBM 30XX mainframes running under MVS or DOS/VSE operating systems.
- Expert EDI:
  - Provides the ability for trading partners with different software applications to communicate
  - Can be integrated directly with other MSA systems or may be used with the user's applications software
  - Translates the information from the user's software application, based upon a knowledge base of EDI industry standards
  - Transmits directly between the user's computer and those of the user's trading partner via the user's communications software or interfaces to any third-party service provider

- Supplies electronic exchange certification and a variety of reports for a complete audit trail

MSA provides professional services to tailor the EDI solution to integrate with the user's application. The company's Professional Services Group can customize Expert EDI or MSA applications software to meet the unique needs of users. MSA had priced EDI Expert to include installation and customization.

Industry Markets

MSA markets its products across many industries. As a result of a long-term strategic plan to focus on industry-specific business solutions, the company has targeted five industries: manufacturing, government, financial services, higher education, and health care. MSA's EDI software is marketed to large manufacturers and large distributors.

MSA has an agreement with GE Information Services (Rockville, MD) for general joint marketing. The company also has a marketing agreement with the IBM Information Network.

Geographic Markets

MSA's EDI software is marketed in the U.S., Canada, and Europe.

The company has offices in 24 U.S. cities, five cities in Canada, and Europe (Belgium, Denmark, France, West Germany, Ireland, Italy, Norway, Spain, Sweden, U.K.). MSA also has offices in Australia, New Zealand, and Hong Kong.

Strategies

MSA has leap-frogged into the EDI market by licensing an existing, and leading, mainframe EDI package. Then it bundled the software license with professional services and increased the price accordingly.

MSA does not consider EDI software to be solely translation. Interfaces to existing MSA packages have been developed, and the software can be mapped to non-MSA applications.

Clearly MSA's EDI efforts will benefit from the company's reputation as a mainframe software provider. Many of its prospects will be existing customers. However, the company also expects to identify new clients for its primary applications through the EDI marketing effort.

COMPANY PROFILE

X

METRO-MARK INTEGRATED SYSTEMS, INC.

86 Elm Street
P.O. Box 338
Roslyn Heights, NY 11577
(516) 484-0949

Alfred Lozito, Edward Luna,
Eugene Sedlock, Principals
Private Company
Total Employees: 20

The Company

Metro-Mark Integrated Systems, Inc. was founded in 1975 as a software and consulting company developing proprietary systems for the food industry.

Recognizing the opportunities in EDI, the company decided to specialize in this area.

In 1982 Metro-Mark released the first of its EDI software products, a product for the IBM S/34 minicomputer. The company has since broadened its product line and has developed products for microcomputers and mainframes.

Key Products and Services

Metro-Mark's family of EDI software products, TRANSLATOR, is developed for microcomputers, minicomputers, and mainframes. The TRANSLATOR series supports ANSI X12 (and subsets VICS, TALC, AIAG), TDCC, UCS, WINS, and EDIFACT standards.

Metro-Mark's EDI software for microcomputers is MICRO*TRANSLATOR.

- System requirements are as follows:

  - IBM PC XT/AT or compatible
  - 256K memory
  - 10MB hard disk
  - MS-DOS 3.1 or higher
  - Monochrome monitor
  - Dot-matrix printer

- MICRO*TRANSLATOR has the following features:
  - User-defined parameters by trading partner
  - Automatic creation/sending of functional acknowledgements
  - Message standard and version defined by trading partner
  - Audit trail on/off options
  - User-defined system control when exiting system
  - User-defined system control at end of interpretation
  - User-selectable communication control for transmitting and receiving data
  - Table-driven, menu-driven
  - On-line file maintenance and reporting
  - Rejected traffic can be overridden by user to be accepted
  - Control of outbound and inbound traffic unique by party
  - TDF (Transaction Data File) layouts produced by system for all transactions
- Metro-Mark has developed data entry and reporting system software that it offers as options with MICRO*TRANSLATOR. Products include Grocery Facilities and Motor Facilities, which are specifically designed for the grocery industry and motor carriers. General Business Facilities can be used by any industry.
- The Micro Communications Option is an integrated modem for the IBM PC family and compatible computers.

For the minicomputer environment, Metro-Mark offers three products: TRANSLATOR*34, TRANSLATOR*36, and TRANSLATOR*38—for IBM S/34, S/36, S/38 respectively.

- System requirements are as follows:
  - TRANSLATOR*34:
    - SSP with COBOL run-time support and single-line communications adapter
    - Synchronous modem
    - System usage:

      Library: 300 blocks
      Files: 400 blocks per message standard
  - TRANSLATOR*36:
    - Single-line communications adapter
    - Synchronous modem
    - System usage:

      Library: 300 blocks
      Files: 400 blocks per message standard
  - TRANSLATOR*38:
    - CPF release 5 or higher and single-line communications adapter
    - Synchronous modem
    - System usage:

      Approximately 140 objects
      2- to 3-MB hard disk storage
- TRANSLATOR*34, TRANSLATOR*36, and TRANSLATOR*38 have features similar to those of MICRO*TRANSLATOR.

In 1988 Metro-Mark introduced TRANSLATOR*MVS, designed specifically for the IBM MVS mainframe environment. It was developed by Crowntek, a Canadian firm, which has been sold. The Crowntek development team formed Lakestone System, and continues to support the package.

- System requirements are as follows:
  - Mainframe component:
    - IBM or compatible mainframe computer
    - MVS/SP or MVS/XA operating system
    - VS COBOL Execution Time Library
    - 10 MB DASD + 2 MB/message standard

- Micro component:
  - ° IBM PC, XT/AT, or compatible
  - ° 256K memory
  - ° 1 MB hard disk storage + 2-MB-per-message standard
  - ° MS-DOS 2.0 or higher
  - ° PC-to-mainframe file transfer system
  - ° Monochrome monitor
  - ° Dot matrix printer

• TRANSLATOR*MVS has the following features:

- Interactive personal-computer-based file maintenance system for:
  - ° System profile
  - ° User/partner profiles
  - ° Message standards
- Automatic creation/sending of functional acknowledgements
- User-defined parameters by trading partner, including:
  - ° Message standard and version
  - ° Type of acknowledgement
  - ° Communications type (direct or third-party)
- All translation completely table-driven
- Separate generation of EDI documents and creation of EDI transmission groups
- Flexible selection criteria of EDI documents to be extracted for transmission
- Acknowledgement and EDI document file maintenance facilities
- Straightforward TDF (Transaction Data File) interface to TRANSLATOR

Metro-Mark's software products are functionally compatible and thus enable upward migration. The company applies the full cost of a user's existing software toward the upgrade.

TRANSLATOR products are priced as follows:

	Initial Fee	Annual Renewal Fee
MICRO*TRANSLATOR	$1,995	$399
Options:		
Grocery Facilities	$700	$140
Motor Facilities	$700	$140
General Business Facilities	$1,995	$399
TRANSLATOR*34	$5,000	$670
TRANSLATOR*36	$5,500	$740
TRANSLATOR*38	$6,000	$805
TRANSLATOR*MVS	$25,000	$3750

In mid-1988, Metro-Mark claimed about 350 installations of its TRANSLATOR products.

Industry Markets

Metro-Mark's software products are marketed across many industries, including food, retail, apparel, and transportation.

In addition to direct channels, Metro-Mark markets TRANSLATOR through distributors and third-party networks. The company has a marketing agreement with ORDERNET Services (Columbus, OH) for distribution of its products.

Geographic Markets

Metro-Mark's systems are installed in the U.S., Canada, Mexico, and Western Europe—including the Netherlands, West Germany, and France.

In addition to corporate headquarters in Roslyn Heights, NY, the company has an office in Toronto, Canada (Metro-Mark Canada, through an arrangement with Lakestone Systems).

Strategies

Metro-Mark's strategy is to provide a full line of compatible, functionally similar software, allowing users to migrate as their requirements increase. Additionally, the company will apply the full purchase price to an upgrade package.

COMPANY PROFILE

Y
PERWILL INCORPORATED
5053 La Mart Drive, Suite 101
Riverside, CA 92507
(714) 683-7920

William T. Pugsley, President
Wholly owned subsidiary of
The Perwill Group
Total Employees: 6

The Company

Perwill Incorporated was established in 1985 as a subsidiary of The Perwill Group to develop and market EDI software.

The Perwill Group (Alton, Hampshire, U.K.) was founded in 1973. Since 1980 the company has been providing software and services to users of Hewlett-Packard HP 3000 systems.

In addition to its U.S. subsidiary, The Perwill Group has a European subsidiary in Hamburg, West Germany.

Key Products and Services

In 1988 Perwill introduced EDI/3000, a series of EDI software products specifically developed for the Hewlett-Packard HP 3000 minicomputer.

- EDI/3000 supports both U.S. and European standards. U.S. standards supported include ANSI X12 and TDCC (UCS, WINS), while European standards supported are TRADACOMS and ODETTE. EDI/3000 also supports EDIFACT, the international EDI standard.

- Under the EDI/3000 series Perwill offers four products:

  - EDIPARSE/3000 Translation Formatter
  - EDILINK/3000 Communications Network Manager
  - EDIFORM/3000 Mapping and Maintenance
  - EDIMGR/3000 Audit and Control

- EDIPARSE/3000 takes flat file input records and produces EDI segments according to the user's chosen standards, adding all the necessary control segments to make a sendable package. EDIPARSE/3000 does the opposite for incoming messages.

- EDILINK/3000 uses standard HP software (2780 or X.25-based) to sign-on to the user's trading partner or network supplier and send outgoing messages, receive incoming messages, and control and audit

the entire EDI transfer process. EDILINK/3000 maintains a database and provides interactive progress inquiry as well as periodic batch status and audit reports.

- EDIFORM/3000 takes the user's existing transaction files and rearranges the data into EDI segments matching those transactions. EDIFORM/3000 takes complete sets of records from the input and produces equivalent sets of records on output. EDIFORM/3000 will also reverse the process if needed.

- EDIMGR/3000 provides a framework for co-ordinating all the other constituent processes to make EDI communications as simple and error-free as possible. EDIMGR/3000 interfaces to the user's applications systems (accepting outgoing files for forming, parsing, and transmission) and activates the appropriate applications systems to deal with incoming transmissions after they have been automatically parsed and formed.

- EDI/3000 is priced according to the modules required, each ranging from $2,700 to $7,200. The series, consisting of the four modules described above, is priced at $18,000. Annual maintenance is priced at $540-$1,440 depending upon the module, with a price of $3,600 for the series.

- Perwill anticipates 40 installations in 1988 for the U.S. and Canada.

Although the software was developed specifically for the HP 3000 minicomputer, Perwill has modified the software and offers versions of EDIPARSE/3000 and EDIFORM/3000 for the IBM PC, XT/AT, or compatibles.

Industry Markets

Perwill markets its EDI software products across all industries. The company focuses on firms having HP3000 installations and targets firms that trade with European companies.

Perwill's parent company, The Perwill Group, has marketing alliances with companies in the U.K. for distribution of its software products in that country.

Geographic Markets

Perwill markets its products in the U.S. and Canada. European sales are handled by the parent company and its European subsidiary.

Strategies

Perwill's strategy rests upon providing its clients with systems that, in addition to local requirements, meet international operational requirements.

The company's software provides for foreign currencies and languages. Perwill believes it is the only company in the world to offer EDI software that works on both U.S. and major European standards.

COMPANY PROFILE

Z PIEDMONT SYSTEMS INCORPORATED

1116 S. Marshall Street
Winston-Salem, NC 27101
(919) 722-2168

Chuck Cloer, President
Private Company
Total Employees: 8

The Company

Piedmont Systems was founded in February 1987 to develop and market electronic data interchange (EDI) management software. The principals of Piedmont Systems have a background in application software and the distribution industry.

Key Products and Services

Piedmont Systems' EDI software product, TEL-EDI, was introduced in April 1988. TEL stands for "The Electronic Link."

- TEL-EDI supports ANSI X12 standards and its subsets.
- TEL-EDI runs on single-user MS-DOS (Version 2.0 or higher) systems (IBM PC and compatibles) and low-end multiuser systems running under UNIX or Xenix.
- The general features of TEL-EDI are the following:
  - Built-in order entry/invoicing applications system
  - On-line search capability
  - Automatic, timed dial-out mode
  - Transmission control reporting
  - Multiple third-party network support
  - Table driven—all tables user modifiable
  - Ability to create proprietary formats and subsets
- In a front-end or integrated environment, Piedmont Systems claims a unique process for mapping EDI data into applications files. With the exception of ID codes, users can specify the code set, numeric and data packing schemes, and byte locations of the data to be presented to their internal applications. This can be done in a single, flat file or as multi-level files up to ten levels deep. The primary benefit is that users can design the TEL-EDI output file to look like one of their own records rather than pick data from a rigid format designated by the vendor's software.

- The TEL-EDI Base Package is priced at $2,495. The TEL-EDI Integration Option, which enables users to interface with their existing applications, is priced at $995.
- Annual maintenance is priced at $450 for the Base Package and $650 for the Base Package with Integration Option.
- Because of TEL-EDI's recent introduction, Piedmont Systems has a only few installations. The company anticipated selling 150 to 200 packages of TEL-EDI during 1988.

Industry Markets

Piedmont Systems' customers are primarily small- to medium-sized businesses. Approximately 60% are in distribution, and the remaining 40% are manufacturing companies. The company has customers in the tobacco, textile, glass, and automotive industries.

Geographic Markets

All of Piedmont Systems' revenue is derived from the U.S. Future plans include expansion into international markets.

Strategies

Piedmont's geographical location provides proximity to customers that competitors might not reach.

Piedmont Systems' strategy focuses on developing EDI software with extensive mapping and translation features for easy integration with a client's existing applications. The company claims it can typically have an installation site functional in one day, and can shorten or eliminate a test phase.

Piedmont officials report the company is developing EDI software for the Apple Computer Macintosh environment. This would be the first EDI translation product for such a system, and would likely be used by Apple for its own EDI implementation.

COMPANY PROFILE

AA
PROGRAM SCIENCE
INCORPORATED
P.O. Box 549
Armonk, NY 10504
(914) 273-6740

M. Cetra, President
Private Company
Total Employees: 6

The Company

Since 1973, the individuals behind Program Science Inc. (PSI) have been in the business of providing computer-based solutions for business applications. PSI incorporated in 1980, and in 1981 began creating electronic data interchange (EDI) systems for Fortune 500 and other companies.

In 1984, PSI developed for Control Data Corporation an EDI "mailbox" service called REDINET-IBTS. To complete this service, PSI created a computer-assisted instruction course (REDI-SET-GO!) to explain the concept of electronic data interchange and ANSI X12 standards. PSI also offered technical support to Control Data's REDINET customers for one year.

Key Products and Services

PSI provides turnkey EDI systems to its clients, including software, hardware, education, and consulting.

The company markets X-CHANGE™, EDI software originally developed by PSI and subsequently sold to Document Interchange Systems Corporation (Ridgefield, CT), which was formed by former PSI employees. DISC continues development work on the product, which both it and PSI distribute. Lloyd Bush and Associates, a firm previously profiled in this volume, also distributes the product.

- X-CHANGE supports ANSI X12 and TDCC standards.
- X-CHANGE is developed for the IBM PC or compatible using MS-DOS 3.0 or higher. It communicates most easily with other X-CHANGE systems.
- X-CHANGE includes the following features:
  - Menus
  - Dial-up capability

- Screen formats or transactions
- Conversion to and from ANSI X12 standards
- Send and receive capability
- Automatic functional acknowledgements
- Help screens
- X-modem protocol support

- X-CHANGE is priced at $1,295 - $3,000, depending upon the enhancements and communications preferred (asynchronous or bisynchronous).

- As of mid-1988, PSI claimed about 200 installations for X-CHANGE.

PSI has developed and markets REDI-SET-GO!, a computer-based training course that runs on the IBM PC or compatible.

- REDI-SET-GO! consists of a workbook, three diskettes (in color and monochrome) and "starter programs" for the send and receive modules. The course consists of four lessons:

  1. An introduction that overviews EDI communications and the ANSI X12 standards

  2. "Formatting X12 data" - a simple explanation of ANSI X12 standards, how transactions are formatted, and how to convert transactions to the ANSI X12 format

  3. "Converting your data" - starter programs for sending and receiving ANSI X12-formatted data

  4. "Communications" - what hardware and software is required for EDI communications

- Lessons one and four provide an overview for the user. Data processing personnel can take the complete course if they desire to develop EDI software in-house.

- REDI-SET-GO! is priced at $100.

- The company has sold about 1,000 packages of REDI-SET-GO!

- PSI claims that it is the only company to offer a computer-based training course for electronic data interchange.

Industry Markets

PSI's clients are suppliers to railroads and companies in the manufacturing, retail, and automotive industries.

Geographic Markets

A majority of PSI's revenue is derived from the United States. The company also markets its products in Canada.

Strategies

PSI's strategy lies in providing EDI software that can be easily enhanced and that is truly "off the shelf." The company strives to provide software that is easy to learn and easy to use.

COMPANY PROFILE

BB RAILINC CORPORATION

50 F Street, NW
Washington, DC 20001
(202) 639-5580

Henry Meetze, President
Wholly owned subsidiary of Association of American Railroads
Total Employees: 125
Total Revenue, Fiscal Year End 12/31/87: $13,000,000

The Company

RAILINC is the data processing subsidiary of the Association of American Railroads (AAR) and operates a large private telecommunications network for the railroad industry.

RAILINC provides computer services to the AAR, as well as supports large data processing jobs that affect the entire railroad industry. Examples include the TRAIN II® network, an international freight car data base that RAILINC maintains, and UMLER, a computerized version of the official Railroad Equipment Register.

RAILINC's telecommunications network can be used to interact with these data bases, as well as to perform EDI transactions with railroads and other companies that are on RAILINC's network.

Key Products and Services

RAILINC's EDI software product EDI/SYNAPSE was first installed in 1986. EDI/SYNAPSE supports ANSI X12, TDCC (Railroad, Air, Ocean, Motor), and EDIFACT standards.

- System requirements are as follows:
  - IBM PC XT/AT or compatible
  - 640 KB memory
  - 10 MB hard disk
  - Monochrome or color monitor
  - MS-DOS 3.1 or above
  - Serial communications port
  - Printer, 132 column

- 1200-baud Hayes Smartmodem or compatible or RAILINC's 2400-baud or 4800-baud Bisynchronous Communications Package

• EDI/SYNAPSE includes the following features:

- Menu and command-driven system; standardized and customized tables; flexibility to tailor menus, help screens, and screens for data entry and receipt

- Password protection with up to 99 access levels

- Compatibility with other RAILINC software packages

- Flat-file conversion: the facility to convert a transaction from message format to ASCII format or convert ASCII format to message format. This allows data to be processed by PC-based or mainframe-based facilities such as RPG, COBOL, or data base management packages.

- On-line support capability: the optional feature connecting the user's PC with one at RAILINC, enabling a RAILINC technician to view exactly what is on the user's screen, and to control the user's PC if necessary

- Ability to assign default values that can be either seen by or hidden from the user

- Editing facilities that ensure that the data entered by the user meets EDI standards

• EDI/SYNAPSE is priced at $1,985, with a mandatory annual maintenance fee of $200. Bisynchronous communications capability (including an internal modem) is offered for $1,150 for 2400 baud, and $1,550 for 4800 baud.

• As of late 1988, RAILINC has installed 50 units of EDI/SYNAPSE.

Industry Markets

RAILINC focuses primarily on the railroad industry. Customers are rail shippers, rail suppliers, rail carriers, and equipment-leasing companies.

In August, 1988, Railinc entered an agreement with a newly formed company, Data Dispatch Corporation (McLean, VA), to market, support, and continue development of EDI/Synapse for several different industries. DDC reports that it has a major European contract to deliver an EDIFACT version of the software for use in the Port of Rotterdam's INTIS project.

Geographic Markets

One hundred percent of RAILINC's revenue is derived from the U.S. and Canada.

Strategies

RAILINC targets mainly the transportation industry by providing a full range of products and services. This combination of services and products is seen as a strategic strength, as is the company's roots in the transportation industry.

The company reported it was examining expansion into industries other than transportation, but by signing with another firm to distribute and enhance Railinc's EDI software, Railinc has perhaps indicated intention to stay industry-focused.

COMPANY PROFILE

CC
RELEASE MANAGEMENT SYSTEMS
17187 N. Laurel Park Drive
Suite 204
Livonia, MI 48152
(313) 462-1200

Matt Rozek, President
Private Company
Total Employees: 12
Total Revenue, Fiscal Year End
3/31/88: $500,000*

*INPUT estimate

The Company

Release Management Systems (RMS) was founded in 1982 to develop and market EDI software.

Initially the company focused on the automotive industry, which, at the time, used proprietary EDI standards. RMS has since developed EDI software based on industry standards, and the company's market has grown to include a variety of industries.

In anticipation that EDI will be "everywhere," the company's strategy focuses on developing products that can be easily ported across different hardware platforms and operating systems.

Key Products and Services

RMS' key product, RMS-VLT (Variable-Length Translator), was introduced in 1985. As its name suggests, RMS-VLT is a generic variable-length translator.

- RMS-VLT supports ANSI X12 standards and its subsets.
- RMS-VLT is available under the MS-DOS, PC-DOS, and BTOS operating systems.
  - MS-DOS and PC-DOS are used in conjunction with the IBM PC series and compatible microcomputers.
  - BTOS is Burroughs' (now Unisys') version of CTOS, an operating system developed by Covergent Technologies. The associated hardware includes Convergent Technologies' NGEN Series Workstations and MegaFrame Series computers.
- Product features of RMS-VLT include the following:
  - Screen generator for document input

- User-definable mainframe/mini/micro interface facility for import and export of document-related data
- File import/export data-editing features
- Ability to define default values pertaining to Partner/Document requirements
- On-line "browse" feature to assist in document-related maintenance functions
- User-definable partner and communication ID
- User-definable direct connect and/or public network communication
- Transaction set processing by document and/or partner ID
- Multiuser capability
- Industry standard COBOL
- Mainframe portability
- Customer and internal data cross reference/conversion capability
- Unlimited number of transaction set/versions can be maintained on the system
- Transaction set copy feature for ease of standards/document maintenance
- Ability to create and support unique document formats
- Automated interface with RMS applications data base
- Automated archiving system
- On-line error checking
- Password security
- Multicompany processing capability
- Inquiries and reports:
  - Selection options for generating reports and inquiries
  - Transaction control reporting
  - Error/exception listings
  - Document status inquiry

- File import/export exception listing
- Communication file listing
- Partner file listing
- Transaction set listing
- Cross reference report
- Generated screen format listing

- The company also offers training, implementation, and consulting services.

- As of mid-1988, RMS had about 350 user installations.

- The company is porting its software to VMS (to run on DEC MicroVAX) and UNIX System V operating systems.

Industry Markets

RMS markets its products across industry sectors. Customers range from small to large companies in various industries, including manufacturing, distribution, and value-added retail chains.

The company is evaluating marketing its EDI software to government-related industries such as aerospace.

In addition to direct sales, RMS also markets its products through resellers, value-added dealers, software system integrators, and source code licensors/resellers.

Geographic Markets

A majority of RMS' revenue is derived from the U.S. and the remaining revenue from Canada, Mexico, Australia, and South Africa.

Strategies

RMS' EDI software is portable, which expands the types of computer systems that can use it. The company offers the software integrated with product marking, bar code, accounting, and production control applications that it sells. It also provides a product called The Customizer that facilitates integration with a customer's applications.

COMPANY PROFILE

DD
ST. PAUL SOFTWARE
786 Transfer Road
St. Paul, MN 55114
(612) 641-0963

Gary Anderson, President
Private Company
Total Employees: 10
Total Revenue, Fiscal Year End
12/31/87: $350,000*

*INPUT estimate

The Company

St. Paul Software, founded in 1981, markets application software products for electronic data interchange (EDI) and electronic data collection (bar code reading and printing) to the manufacturing and distribution industries.

The company entered the EDI area in 1985 when it developed a custom system for a supplier to Burlington Northern Railroad.

St. Paul Software's 1987 revenue is estimated at $350,000. It is anticipated that 1988 revenue will reach $500,000.

Key Products and Services

Approximately 50% of the company's revenue is derived from EDI software, 30% from bar code collection software, and 20% from custom development services and support.

Interconn, introduced in 1985, is a microcomputer-based EDI software package.

- Interconn supports ANSI X12, TDCC, WINS, and UCS standards.
- The hardware and communications requirements are as follows:
  - IBM PC XT/AT or compatible microcomputer
  - 640 K memory
  - 20 MB hard disk
  - Dot matrix printer
  - Hayes-compatible modem for asynchronous communications
  - Bisynchronous modem for bisynchronous option
  - One serial port
- Interconn's basic functions allow the user to receive and send documents, review received documents, print any document on the system, and manually create documents to be transmitted to other computer systems.

- The Document Manager allows the user to inquire about the current status of a document, print a daily or master document activity log report, and control the queuing of documents to be transmitted during the next communications session.

- The Import/Export Documents function allows the user to transfer documents to and from the system in ASCII file format, and to transfer documents to St. Paul Software's Just-In-Time manufacturing systems.

- The Interconn Utilities allow the user to perform document table maintenance, and to set up company packets, macro packets, and mail box IDs.

- The Terminal Emulator allows the user to log into remote systems and function as an on-line terminal.

- The Mail Box ID information provides Interconn with the specific communications parameters to complete the physical sign-on between the two computer systems.

- The Macro Definition feature allows the user to preprogram queries and responses necessary to obtain software sign-on and actual document transmission.

• Interconn is priced at $1,995. The service contract ranges from $399 to $549.

• As of mid-1988 there were 70 installations of Interconn.

St. Paul Software is developing a new EDI software package written in RM/Cobol for NCR, IBM, and compatible mainframe systems. The company is also developing a C version of its EDI product for UNIX-based systems.

Jobtrack is a micro-based bar code data collection package that interfaces with bar code readers and uploads and downloads information to minicomputers and/or mainframes. The product is targeted to manufacturers and distributors.

• Jobtrack runs on IBM and compatible microcomputers and ranges in price from $5,000 to $10,000.

• There are currently approximately 20 Jobtrack installations.

Industry Markets

St. Paul Software's target market for its software products includes manufacturers and distributors.

St. Paul Software has marketing agreements with dealers to distribute its software products in Atlanta and Chicago.

Geographic Markets

One hundred percent of St. Paul Software's revenue is derived from the U.S.

Strategies

St. Paul has had its greatest success to date in selling its EDI software to the suppliers of railroads who most often communicate directly with the rails for EDI exchanges. It claims to have successfully competed against PC packages from EDI Inc. Its plan to port the software to larger systems will broaden the products' appeal.

The company's marketing approach is to call its software "saintly"—certainly an attention-getting device that presumedly opens doors.

COMPANY PROFILE

EE STERLING SOFTWARE ORDERNET SERVICES, INC.

1651 Northwest Professional Plaza
Columbus, OH 43220-0908
(614) 459-7500

William Plumb, President
Division of Sterling Software
Total Employees: 75
Total Fiscal 1987 Revenues: $7,000,000*

*INPUT Estimate

The Company

ORDERNET Services, a division of Sterling Software, specializes in EDI services and software. The company has been offering third-party network services since 1978. The company has over 800 U.S. and Canadian network service clients representing a variety of industries.

EDI software products marketed by ORDERNET Services include communications packages and translation software for microcomputers, minicomputers, and mainframes.

Key Products and Services

ORDERNET Services' EDI software product GENTRAN™ translates data from internal fixed-length record formats to variable-length data formats for EDI transmission, and interprets received EDI communications back into internal formats for processing.

GENTRAN was licensed from EDI Solutions, a company also profiled in this volume, but the package has subsequently been enhanced.

- GENTRAN supports ANSI X12 and its subsets (CIDX, EDX, VICS), UCS, WINS, and TDCC (Motor, Rail, Ocean, Air) standards.
- GENTRAN is designed for IBM 30XX, 43XX, and 9370 mainframe computers and compatibles using MVS, MVS/XA, or DOS/VSE; Hewlett-Packard HP 3000; DEC VAX; and IBM S/38 minicomputers.
- GENTRAN offers the following features:
  - Completely table-driven
    - ° All EDI transactions, segments, and elements are described by tables. GENTRAN will convert the transactions received from the standard table format to an internal table format. Changes to the tables will result in automatic changes to the processing performed and the output created.

- Editing and error checking

  ° GENTRAN performs detailed checks for compliance to the appropriate standard. This checking includes validation of control numbers, transaction IDs, segment IDs, segment sequencing, presence of mandatory segments and elements, minimum and maximum element length, element type, code values, frequency of segments and loops, and interelement dependencies. User exits are available if needed for additional processing.

- Options selectable by trading partner

  ° Many options are selectable on an individual trading partner basis. These include:

  Transactions accepted from the partner; transactions and functional groups to be sent to the partner

  Selection of segment terminator, element separator, and subelement separator for generation of outbound control segments

  Transaction status (production or test)

  ID on interchange, group, and transaction set segments (ISA, ICS, BG, GS, ST) for send and receive

  Whether to return an interchange acknowledgement, group or transaction acknowledgement, or error acknowledgement in any combination (or none at all)

  Choice in interchange envelope (ISA/IEA, ICS/ICE, BG/EG)

  Use of control number provided, or override in trading partner file. Available at interchange, group, and transaction levels

  Version defaults or overrides for validation purposes

- Built-in auditing system

  ° GENTRAN allows the user to audit all EDI activity on a selective basis. Auditing can be performed at the interchange, group or transaction levels; on incoming or outgoing transmissions; or both incoming and outgoing transmissions.

• ORDERNET Services has chosen a two-tier pricing policy for GENTRAN, the price depending upon the hardware platform used. Under the Class A Schedule, which applies to IBM 30XX, 43XX, and 9370, GENTRAN is priced at $25,000. Annual maintenance, for which there

is no charge for the first year, is priced at $3,000. Under the Class B schedule—which applies to DEC VAX, Hewlett-Packard HP 3000, and IBM S/38—GENTRAN is priced at $18,000. Annual maintenance, with no charge for the first year, is priced at $2,000.

  - The above-mentioned pricing for GENTRAN (both Class A and Class B schedules) includes two-day on-site installation and training.

- As of mid-1988, there were about 60 installations of GENTRAN.

- In June 1988 ORDERNET Services released Version 3.0 of GENTRAN. The major features of version 3.0 include VAX support, CICS interface, provision for EDIFACT formats, and enhanced capabilities in the areas of multiple-file handling, parameterized error handling, audit reports, and acknowledgements generation.

- In December 1988 ORDERNET introduced a new product called GENTran Plus, which combines translation, highly functional and flexible integrated communications, and mailboxing using SuperTracs technology from SSW Software Labs Division.

- GENTran Plus for VAX environments will also be available and GENTran Version 4 was scheduled for release in February 1989 with support for several EDIFACT documents as well as other new features.

ORDERNET Services offers DOCULINK, a series of software products for microcomputers and mainframes. DOCULINK will facilitate bisynchronous or asynchronous communications between the user and ORDERNET Services' network.

- DOCULINK/OS provides for bisynchronous communications, and works with IBM 30XX, 43XX, or compatibles running the OS operating system.

- DOCULINK/MNP is a software product to effect Microcom Networking Protocol (MNP) communications on an IBM PC or compatible.

- DOCULINK/BSC provides bisynchronous communications on an IBM PC or compatible.

Industry Markets

ORDERNET Services markets its EDI software products across all industries, with a strong orientation toward the distribution industry; these industries include grocery, hardware and housewares, pharmaceutical and medical/surgical distribution, mass merchandising, and warehousing. Other industry markets are transportation, automotive, petroleum, and government.

The company has a marketing agreement with EDI, Inc. (Gaithersburg, MD) to resell the latter's microcomputer software package, TELINK. ORDERNET Services also distributes Metro-Mark Integrated Systems' (Roslyn Heights, NY) and ACS Network Systems' (Concord, CA) software products.

Global Software, Inc. (Atlanta), a subsidiary of the Hathaway Corporation (Broomfield, CO), which sells accounting and other business software for IBM mainframes and minis, is an agent for ORDERNET software and network services to Global's installed base.

Management Horizons Data Systems (London, Ontario), is a reseller of ORDERNET's services and products in Canada.

Geographic Markets

ORDERNET Services markets its EDI software products in the U.S. and Canada.

Strategies

ORDERNET is close to its customers. The company claims to host the largest user group meeting offered by any EDI service provider, with a wide variety of workshops and industry participants.

ORDERNET is expanding from its role as a provider of network services and a reseller of other company's software; it will now offer its own packages. ORDERNET is drawing upon strengths in other Sterling Software units to enhance EDI products.

COMPANY PROFILE

FF SUCCESS SYSTEMS

1867 Independence Square,
Suite 103
Atlanta, GA 30338
(404) 395-6652

Howard Spiller, Executive Vice President
Private Company
Total Employees: 22

Overview

Success Systems develops and markets computer systems for the food broker industry. The company specializes in AT&T hardware and offers systems based on the AT&T 3B2 minicomputer and 80386-based microcomputer.

Success Systems' principal product, Success PRO 2000, is an integrated system for food brokers. System features include order entry, order message generation, sales statistics, sales analysis, budgeting, promotion and commission calculations, short-ship reports, and new placement reports.

The company has developed EDI software that is included with the Success PRO 2000 series. The system supports UCS standards.

Success Systems was founded in 1976. The company has 22 employees and is privately held. In addition to corporate headquarters at Atlanta, the company has a sales office in Kansas City, MO.

COMPANY PROFILE

GG
SUPPLY TECH, INC.
27784 Franklin Road
Southfield, MI 48034
(313) 357-3430

Ted Annis, CEO
Gail Jackson, President
Private Company
Total Employees: 20
Total Revenue, Fiscal Year End
12/31/87: $2,100,000

The Company

Supply Tech, Inc. was founded in 1984 by personnel from Ford Motor Company. Supply Tech initially developed IBM PC-based electronic data interchange (EDI) software for the automotive industry. The company's products focus exclusively on EDI and bar coding.

The company currently has 20 employees.

Key Products and Services

STX12, introduced in 1987, is Supply Tech's microcomputer-based general-purpose EDI software product. STX12 supports all ANSI X12 and TDCC (Motor, Rail, Air, Ocean) transactions, including the various industry-related standards, such as AIAG, WINS, VICS, TALC, and UCS.

- STX12 runs on IBM and compatible microcomputers and features the following:
  - Push button, autodial operation
  - Automatic generation of data entry screens, report formats, and flat-file interface
  - On-demand hard-copy reporting
  - Automatic backup, recovery, and retransmission
  - Unattended communication
  - Menu-driven operation
  - Help windows for assistance during operation
  - Transactions designed and implemented without programming

- Password security
- Data encryption (on request)
- Flat-file interface for integration with other computer applications

- STX12 is priced at $1,995 (Level 1 System) and $3,990 (Level 2 System).
- The company provides installation and training ($600 a day) and hotline support ($600/year for Level 1 System, $780/year for Level 2 System).
- As of mid-1988, STX12 was installed at over 550 sites.

Supply Tech has enhanced STX12 software to include nonstandard or non-X12 data with the EDI transaction. Such data are usually associated with commonly used microcomputer software, such as Lotus 1-2-3 or dBASE III.

Supply Tech's first product, ST1, was introduced in 1984 for the automotive industry and uses a combination of proprietary and ANSI X12 standards. ST1 is installed at over 400 locations in the U.S., Canada, and the U.K.

Supply Tech provides consulting services for ANSI X12 and Automotive Industry Action Group (AIAG) standards interpretation and use. The company also offers custom transaction development services.

Industry Markets

Supply Tech's EDI software is marketed to a range of industries, including automotive, manufacturing, transportation, financial, government, grocery, retail, and warehousing.

Supply Tech is an authorized agent for GE Information Services and Transettlements. The company also has marketing agreements with Control Data Corporation and AT&T, and participates in the IBM Industry Marketing Assistance Program.

Geographic Markets

A majority of Supply Tech's revenue is derived from the U.S. and Canada. The company also markets its products in Europe, Mexico, and South America.

Strategies

Supply Tech sees its bar coding products integrated with EDI functions as becoming more important in manufacturing as EDI transactions result from scanned bar code data. However, the company also sees a continuing need for standalone, rather than fully integrated EDI products, because the variety of EDI developments place a support burden on integrated products that may be difficult to support due to their complexity.

Supply Tech's strategy has partially hinged on embracing cutting-edge micro-based solutions. For example, the company has been working on including nonstandard, non-X12 data within an EDI transaction. This data could be word processing files, spreadsheet data, or CAD/CAM data.

With regard to CAD/CAM files, the company is proposing a new format for inclusion in the ANSI X12 standards. It would allows for a special data segment for embedding non-EDI data within an EDI transaction envelope. The special data segment header indicates how many bytes of non-EDI data follow. When the transmitting computer comes across the special segment, it sends the specified number of bytes transparently and then resumes the normal EDI transmission. Under this method, any type of data can be embedded inside the envelope. According to Supply Tech, this technique works best with modems capable of speeds of 19.2 Kbps over dial-up lines, which the company has been recommending for CAD/CAM exchanges.

COMPANY PROFILE

HH TRANSETTLEMENTS, INC.

1745 Phoenix Boulevard
Atlanta, GA 30349
(404) 996-8109

Larry Smart, President
Private Company
Total Employees: 40
Total Revenue (1987): $1,200,000*

* INPUT estimate

The Company

Transettlements, Inc. is an EDI communications and software company owned by the Winship Group, a family-owned business that includes the transportation firm Transus (formerly Georgia Highway Express).

Established in 1977, Transettlements traces its EDI involvement to the 1979 introduction of an EFT automated payment transfer service, an electronic invoicing service (using proprietary formats) in 1982, and freight invoicing using TDCC formats in 1983.

Key Products and Services

Transettlements' EDI translation software package, TranSlate, is written in ANSI COBOL-74 and supports ANSI X12 (and its subsets CIDX, VICS, TCIF), AIAG, and TDCC (UCS, WINS) standards. The software is table-driven and the company licences the source code to the user.

TranSlate can be installed in many hardware environments including IBM 43XX and 30XX series running under DOS and MVS operating systems, Unisys (Sperry, Burroughs), Honeywell, Hewlett-Packard HP3000, Tandem, and DEC VAX equipment.

- The major product features of TranSlate are described under the "Send" and "Receive" modules.
  - Send Module
    - ° The EXTRACT program accepts information from the customer's internal data base and applies appropriate keys to each record.
    - ° The REFORMAT/ANALYZE program converts the extracted data into the ANSI/TDCC or industry standard EDI format as required by the receiving party.
    - ° The GENERATOR program verifies that data is formulated in accordance with EDI segmented data element requirements as speci-

fied by the ANSI/TDCC tables and generates appropriate data transmission files. The GENERATOR is used in both Send and Receive modules.

- Receive Module

  ° The GATHER program combines multiple input files of various record sizes into 512 byte EDI records. It performs edits as defined by the transaction set edit tables to determine acceptance or rejection of a batch/functional group.

  ° The PARSE/EDIT program verifies that data is formulated in accordance with EDI data requirements as specified by Sender/Receiver tables. Accepted and rejected sets generate fixed format records for sort processing.

  ° The REFORMAT/SPLIT program converts EDI data to fixed format records as required by the customers' internal systems. It also splits data into multiple files and converts EDI codes to customer internal codes as required.

- The other features of TranSlate are as follows:

  ° Modification possible to meet trading partners EDI transmission specifications

  Table-driven EDI record sizes

  Table-driven generation and validation of ISA, ICS, BG, and GS segments

  Option to generate and validate EDI control numbers by customer/transaction set

  ° Variable data element delimiters and segment terminators allowing interface with wide variety of EDI participants

  ° Table-driven sort option capability for each transaction set

  ° Skeleton programs provided to directly access and reformat internal data to simple fixed-length EDI formats

  ° Audit trail and customized reports provided for each transaction set

  ° Table driven batch validation procedures provide options for various edits to be ignored, warning or fatal by either customer or transaction set

  - ° Print images of electronic data available for various transaction sets (freight bills, purchase orders, etc.)

- TranSlate is priced at $25,000 for the full package and $15,000 for the basic package. The full package includes a greater number of EDI transaction sets compared to the basic package. Additional sites licences are priced at $12,500 and $7,500 for the full and basic packages, respectively.

- Annual maintenance is priced at $2,750 and $2,000 for the full and basic packages, respectively. There is no charge for the first year of maintenance. Two days of training are included in the full package, while one day of training is included in the basic package. The company provides consulting services at a charge of $800 per day.

In 1988 Transettlements introduced TranS*EDI, EDI translation software for microcomputers. TranS*EDI is designed for small motor carriers to send freight bills to their shippers. This software is based on a PC application acquired from Shell Oil Company. Shell Oil Company developed their PC-based application to allow their carriers to transmit freight bills to them electronically in an EDI format.

- The hardware and communications requirements are as follows:

  - IBM PC XT/AT or compatible
  - 640K RAM, with no memory-resident programs active
  - 10 MB hard disk
  - MS-DOS 2.0 or higher
  - Parallel printer
  - Hayes-compatible modem

- TranS*EDI offers the following features:

  - Document entry and edit capability

  - Import function that will accept a fixed format file and reformat it into the TranS*EDI document structure

  - Selected document print routines

  - Communication script to autodial Transettlements' TranSend network service in unattended mode for phone line cost efficiency

  - Automatic assignment of EDI control numbers

  - Reception and interpretation of functional acknowledgements

  - Menu-driven system maintenance routines

- TranS*EDI is priced at $1,000.

Industry Markets

Transettlements markets its EDI software products across all industries with a major emphasis on the motor transportation industry. The company's products are used by trucking companies, major shippers, and service organizations in the industry. Transettlements' customer base also includes the automotive, steel, chemical, pharmaceutical, food, banking, textile, and retail industries.

Transettlements has a marketing agreement with Tandem Computers (Cupertino, CA) to market its software products directly to users of Tandem NonStop computer systems.

The company has an agreement with Supply Tech (Southfield, MI), establishing the latter as an authorized agent for Transettlements software.

TranSlate was licenced to Management Sciences of America (MSA) for enhancement and integration with that company's business application offerings.

TranSlate was also used in a network environment by Martin Marietta Data Systems' EDI pilot for the U.S. Government's General Services Administration.

Geographic Markets

One hundred percent of Transettlements' revenue is derived from the U.S. and Canada.

The company has its corporate headquarters in Atlanta, GA. Regional offices were located in: Detroit, MI; New York, NY; and San Francisco, CA. However, a late 1988 reorganization led to the closure of these offices.

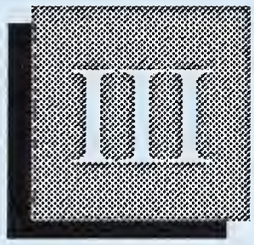
Strategies

Transettlements maintains an active users group that provides suggestions on its products and services.

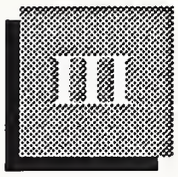
Transettlements has been the leading mainframe EDI software provider. After announcing forays into mini- and micro-based software, Transettlements suddenly drew back, closed its regional offices, and announced intentions to focus on its core mainframe software and network services business. The earlier announcements covered new versions for additional equipment platforms (such as Stratus), support for EDIFACT transactions, and new marketing relationships.

The company's realignment to its primary businesses was a result of a consultant's study which also led to the resignation of its former president.

As of late 1988, it was unclear which new products previously announced will continue to be developed and which will be abandoned, or which marketing relationships will continue.



Conclusions



Conclusions

A

Fragmented Market

As illustrated in this study and the companion report *EDI Software Products: Issues, Markets and Trends*, the EDI software market is a fragmented one, largely inhabited by smaller, entrepreneurial firms and a few major applications vendors that have added EDI to their product mix.

The installed base of EDI software is relatively small, and although those attaining market leadership positions can be identified, it is inappropriate to identify any firm as a clear winner at this early date.

As the EDI market matures, more partnering is likely, and acquisitions are probable. The alliance-forming period is not over.

B

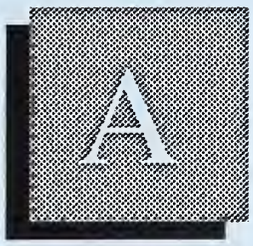
Multiple Solutions Are Available

No one software solution appears to dominate the market, although there are more product offerings for microcomputers. In fact, the microcomputer segment is probably overpopulated and due for a shakeout.

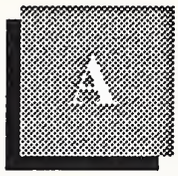
The indications are that most new activity in EDI software will be in minicomputer software (particularly for IBM AS/400 and DEC VAX platforms) and perhaps UNIX-based applications. The barriers to entry are high on the mainframe level, and it is unlikely many new competitors will emerge. Instead, other software companies will likely adopt and enhance existing products (as has MSA and Sterling Software Ordernet) to meet their customers' requirements.

Generic solutions appeared on the market first, but now there is increasing development of integrated solutions that include EDI functionality with inventory, purchasing, distribution, cash management, and other appropriate applications. The links are getting tighter.

Although there are those who feel standalone EDI packages will remain viable due to support issues, it is likely that integrated EDI and related application solutions will be the wave of the future.



Appendix: Glossary of EDI Terms



Appendix: Glossary of EDI Terms

ACCS - "Access," the Aluminum Customer Communication System.

ACH - Automated Clearinghouse, a banking industry mechanism for electronic funds transfer. *Also see* NACHA.

AIAG - The Automotive Industry Action Group, a trade association. Also refers to EDI formats developed by the association.

ANA - Article Numbering Association. The U.K. industry group that introduced bar coding to that country and developed the Tradcoms EDI standard.

ANSI - American National Standards Institute.

ASC - Accredited Standards Committee.

Bar Coding - A standardized method of identifying products that facilitates data entry through scanning of coded printed labels.

Batch Processing - A data processing/data communications method that groups transactions. *Compare to* Real-Time Processing.

CAD/CAM - Computer-Assisted Design and Computer-Assisted Manufacturing, a set of applications that use graphics to manage these functions.

CARDIS - Cargo Data Information System, a concept for trade documentation automation promoted by the National Council on International Trade Documentation. Never implemented in its proposed form, "CARDIS Element Systems" have been developed by several vendors serving the international trade community.

CCD - Cash Concentration and Dispursement, an electronic funds transfer format.

CEFIC - The Brussels-based Council of European Chemical Manufacturers, which sponsors an EDI project.

CIDX - Chemical Industry Data Exchange, a standard based on X12.

CLM - Car Location Messages, applied to railcar logistics.

CLO - Computerized Loan Origination. An EDI application being developed by the mortgage banking industry.

Compliance Checking - A function that verifies that document information is received in the right order and in the proper format.

COMPORD - Computerized Ordering, an EDI system developed by the American Iron and Steel Institute.

COPAS - Council of Petroleum Accounting Standards, an industry association developing EDI standards.

CSI - Commercial Systems Integration. A professional service whereby vendors take complete responsibility for designing, planning, implementing, and sometimes managing a complex information system.

CTP - Corporate Trade Payments, an Electronic Funds Transfer application.

CTX - An electronic funds transfer mechanism that is compatible with the EDI X12 standard, and which carries information about a payment as well as transferring value.

DISA - The Data Interchange Standards Association, the ANSI X12 secretariat.

DISH - Data Interchange for Shipping, a project sponsored by a European group of shippers, carriers, and agents.

EDI - Electronic Data Interchange. The computer-to-computer communications based on established business document standards, or using translations by EDI software housed on users' computers, located at remote computer service bureaus or on value-added network processors.

EDIA - The Electronic Data Interchange Association, formerly known as the Transportation Data Coordinating Council.

EDICT - Istel's U.K. EDI service.

EDIFACT - EDI for Administration, Commerce, and Transportation, the evolving international EDI standard.

EDX - Electronics Industry Data Exchange, based on the X12 standard.

EFT - Electronic Funds Transfer, the transfer of monetary value.

Electronic Mail - The transmission of text, data, audio, or image messages between terminals using electronic communications channels.

Electronic Mailbox - A store-and-forward facility for messages maintained by a transmission or processing facility.

EMBARC - An EDI standard being promoted for use in the paper, printing, and publishing industries.

EMEA - Council for Mutual Economic Assistance, an Eastern European bloc EDI association.

FASLINC - The Fabric and Supplier Linkage Council, a textile industry association dedicted to EDI development and other industry needs.

GTDI - General Trade Data Interchange, an international standard, developed from TDI, accommodating compromises of French participants in SITPRO, the agency behind U.N. certification of the standard. Is evolving into EDIFACT.

HCFA - Health-Care Financing Administration, a U.S. government agency responsible for Medicare administration. Also describes a format (HCFA 1500) for health-care insurance claims.

ICOPS - The Industry Committee on Office Products Standards, sponsored by two office products trade associations for EDI applications.

IGES - International Graphics Exchange Standard, by which CAD/CAM graphics can be transferred electronically.

IIR/ACORD - standards for paper and electronic insurance documents, developed by the Insurance Institute for Research and the Agent Company for Research and Development organization, which have merged.

Interface - The insurance industry term for EDI, applied to agent/company communications, ideally using IIR/ACORD formats.

IRC - International Record Carrier, a common carrier providing messaging and network services, no longer limited to international communications.

IVANS - Insurance Value-Added Service, provided on IBM's Information Network by an insurance industry association.

JEDI - The Joint Electronic Data Interchange Committee, which consisted of representatives of industry trade associations coordinating development of a reference EDI dictionary for the creation of new EDI transactions, segments, or data elements for international use. Its work has largely been supplanted by UNECE Working Party 4.

JIT - Just-in-time, an inventory management philosophy that plans delivery of needed materials and components immediately prior to final manufacture or assembly.

LDI - Logistics Data Interchange, information about the location of materials in transit through the manufacturing/distribution cycle.

MAPPING - The process of linking specific fields of internal document layouts to an EDI standard by segment, data element, and coded value. This needs to be done for each application receiving or sending EDI data.

NACHA - National Automated Clearing House Association, a banking services industry group.

ODETTE - Organization for Data Exchange through Teletransmission in Europe, an automaker's association EDI standard.

Ordernet - Sterling Software's EDI service. Also refers to EDI standards developed by the National Wholesale Druggist's Association for use in pharmaceuticals.

Rapporteur - Used to describe an expert appointed by the United National Economic Commission for Europe Working Party 4, the primary group developing the EDIFACT international EDI standards.

RCS - A Remote Computing Service facility that arranges to process some or all of a user's workload. Similar to a VAN (below) but without network services.

Real-Time Processing - A data processing or transmission method with data entered interactively. Response to input is fast enough to affect subsequent input. The results are used to influence a currently occuring process.

SAFLINC - The Sundries and Apparel Findings Linkage Council, an association in the apparel and related industries promoting EDI and other industry needs.

SAM - Shippers Administrative Messages, a logistics service/application.

Secretariat - The administrative organization providing business and coordination services for various EDI standards creating and maintenance bodies.

SITPRO - Simplification of Information Trade Procedures, a European EDI standards and trade facilitation agency that reports to the Department of Trade and Industry.

SMMT - Society of Motor Manufacturers and Traders. An automotive industry association responsible for the ODETTE project.

Store and Forward - The capability of a transmission or processing facility to hold messages or data until requested, or until a prescheduled time.

SUPER - Study for the Utility of Processing Electronic Returns, an Internal Revenue Service test for electronic filing.

SUPERB - The IRS' electronic filing test program for business returns.

TALC - Textile/Apparel Linkage Council, a subcommittee addressing EDI standards.

TAMCS - Textile/Apparel Manufacturer's Communications Standards.

TCIF - Telecommunications Industry Forum, an industry group involved in EDI, bar coding, and similar technologies.

TDCC - The Transportation Data Coordinating Committee, an early advocate for EDI, now known as the Electronic Data Interchange Association. Also refers to U.S. EDI standards.

TDI - Trade Data Interchange, an international shipping standard. *Also see* GTDI.

TEDIS - An EEC program to promote Trade EDI throughout industry and government.

Tradanet - An ICL (U.K.) EDI service.

Translation - Transforming information sent in one format to another format.

UB82 - A format for health claims insurance submissions.

UCS - Uniform Communications Standards, the EDI standards used by the grocery industry, based on X12, and coordinated by the Uniform Product Code Council.

UNECE - United Nations Economic Commission for Europe. Despite its name, a broadly based representational body developing the international EDI standards called EDIFACT.

UNJEDI - United Nations Joint EDI committee developing technical and procedural standards on EDI.

VAN - Value-Added Network. A common carrier network transmission facility, usually augmented with computerized packetizing, which may also provide store and forward switching, terminal interfacing, error detection and correction, and host computer interfaces supporting various communications speeds, protocols, and processing requirements.

VANGUARD - A U.K. Department of Trade and Industry sponsored awareness and promotional program for VAN and EDI services.

VICS - Voluntary Interindustry Communications Standards, a committee developing EDI standards between retailers and manufacturers.

WINS - Warehouse Information Network Standards, promoted by two representational associations, the International Association of Refrigerated Warehouses, and the American Warehousemen's Association.

WP4 - Working Party 4 of the Economic Commission for Europe, commissioned by the U.N. to develop trade facilitation procedures and international EDI standards.

X.400 - An international electronic messaging standard.

X12 - A set of generic EDI standards, approved by the American Standards Committee.